# TPC Benchmark™ C Full Disclosure Report

for

IBM @server xSeries 250

using

Microsoft SQL Server 2000 Standard Edition

and

Windows 2000 Server

**TPC-C Version 5.0** 

Submitted for Review November 5, 2001



#### First Edition - November 2001

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#### Notes

- <sup>1</sup> MHz only measures microprocessor internal clock speed, not application performance. Many factors affect application performance.
- <sup>2</sup> When referring to hard disk capacity, GB, or gigabyte, means one thousand million bytes. Total user-accessible capacity may be less.

# **Abstract**

IBM Corporation conducted the TPC Benchmark<sup>TM</sup>C on the IBM @server xSeries 250 configured as a client/server system. This report documents the full disclosure information required by the TPC Benchmark<sup>TM</sup>C Standard Specification, Revision 5.0, including the methodology used to achieve the reported results. All testing fully complied with this revision level.

The software used on the xSeries 250 system includes Microsoft\*\* Windows\*\* 2000 Server operating system and Microsoft SQL Server 2000 Standard Edition database.

Two standard metrics, transactions per minute-C (tpmC) and price per tpmC (\$/tpmC), are reported as required by the TPC Benchmark C Standard Specification.

The benchmark results are summarized in the following table.

Hardware	Software	Total System Cost	tpmC	\$/tpmC	Total Solution Availability Date
IBM @server xSeries 250	Microsoft SQL Server 2000 Standard Edition	\$72,487	15,533.72	\$4.67	Nov. 5, 2001
	Microsoft Windows 2000 Server				

The results of the benchmark and test methodology used were audited by Bradley J. Askins of InfoSizing, Inc. The auditor's attestation letter is contained in Section 9 of this report.

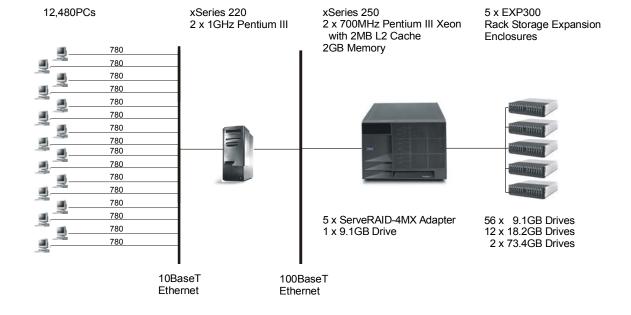


# IBM @server xSeries 250 c/s with Microsoft SQL Server 2000

TPC-C Rev. 5.0

Report Date: Nov. 5, 2001

Total System Cost		TPC-C Throughput		Price/Performance		Availability Date	
\$72,487		15,533.72 tpmC		\$4.6	7 / tpmC	Nov. 5, 2001	
Processors	Database Manager		Operating System		Other Software		Number of Users
Database Server = 2 Client = 2	Microsoft <sup>®</sup> SQL Server 2000 Standard Edition		Microsoft Windows® 2000 Server		Microsoft Visual C++ 6.0 Win32 Microsoft COM+		12,480



System Component	Qty	Server	Qty	Client
Processors	2	700MHz Pentium III	2	1GHz Pentium III
Cache		Xeon w/2MB L2 Cache		w/256KB L2 Cache
Memory	16	128MB ECC SDRAM	1	128MB
		RDIMM	2	256MB
Disk Controllers	5	ServeRAID-4MX Adapter		
			1	Ultra160 SCSI Interface
Disk Drives	57	9.1GB (10000 rpm)		
	12	18.2GB (10000 rpm)	1	9.1GB Hard Disk
	2	73.4GB (10000 rpm)		
Total Storage		753.40GB		
Tape Drive	1	20/40GB SCSI Tape Drive		

# **IBM Corporation**

# IBM @server xSeries 250 c/s with Microsoft SQL Server 2000

TPC-C Rev. 5.0

Report Date: Nov. 5, 2001

Description	Order Number Third-Party		Unit	Qty	Ext. Price		
		Brand	Pricing	Price			Maint.*
Server Hardware							
xSeries 250 / 700MHz/2MB Pentium III Xeon	8665-7RY		1	\$6,799	1	\$6,799	\$1,495
700MHz/2MB Pentium III Xeon Processor	10K2332		1	2,879	1	2,879	Ψ1,433
128MB ECC SDRAM RDIMM Memory Kit	33L3113		1	109	12	1,308	0
ServeRAID-4MX Ultra160 SCSI Adapter	06P5736		1	999	5	4.995	0
Netfinity 4.2M Ultra2 SCSI Cable	03K9311		1	105	10	1,050	0
E54 14" (13.8" Viewable) Color Monitor*	6331N2N		1	149	1	149	90
20/40GB Internal SCSI Tape Drive	00N7991		1	769	1	769	0
NetBAY25 Rack*	9306250		1	1,295	1	1,295	300
Storage Hardware							
Netfinity EXP300 Rack Storage Enclosure*	35311RU		1	3,179	5	15,895	1,000
9.1GB 10K Ultra160 SCSI Drive	37L7204		1	275	57	15,675	0
18.2GB 10K Ultra160 SCSI Drive	37L7205		1	275	12	3,300	0
73.4GB 10K Ultra160 SCSI Drive	06P5756		1	1,099	2	2,198	0
				8	ubtotal	\$56,312	\$2,885
Server Software					•		
Microsoft SQL Server 2000 Standard Edition	228-01079	Microsoft	2	4.999	2	\$9.998	\$0
Microsoft Windows 2000 Server	C11-00821	Microsoft	2	738	1	738	0
Three-Year Maintenance for Software		Microsoft	2	2.095	3		6,285
				,	ubtotal	\$10,736	\$6,285
Client Hardware					•	· ,	
xSeries 220 / 1GHz/256KB Pentium III*	8642-21X		1	849	1	\$849	\$738
1GHz/256KB Pentium III Processor	10K0051		1	599	1	599	0
256MB 133MHz ECC SDRAM RDIMM	33L3144		1	245	2	490	0
9.1GB 10K Ultra160 SCSI Drive	37L7204		1	275	1	275	0
E54 15" (13.8" Viewable) Color Monitor*	6331N2N		1	149	1	149	90
				5	ubtotal	\$2,362	\$828
Client Software							
Microsoft Windows 2000 Server with COM+	C11-00821	Microsoft	2	738	1	738	0
Microsoft Visual C++ Professional 6.0 Win32	048-00317	Microsoft	2	549	1 .	549	0
				S	ubtotal	\$1,287	\$0
Connectivity							
7-Foot Crossover Cable (incl. 2 spares)			3	2	3	6	0
				S	ubtotal		\$0
					Total	\$70,703	\$9,998
Large volume discount of 14% on IBM hard			rchased separ	ately.		(8,214)	\$0
Notes: * The standard 3-year warranties on IE		e been	Three-Yea	ar Cost of	Owners	hip:	\$72,487
upgraded to 7x24, 4-hour response time of ** Five-year warranty. *** 10% or minimum 2		d in place of				•	
on-site service (products have a 5-year return				tp	mC Rati	ing: 1	5,533.72
Pricing: 1 - IBM Corp.; 2 - Microsoft Corp.; 3		···· <b>·</b>					
Audited by Bradley J. Askins of InfoSizing, Inc.	С.				\$ / tp	mC:	\$4.67
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Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing sections of the TPC benchmark specification. If you find that stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.

Numerical Quantities Summary					
MQTh, Computed Maximum	15,533.72 tpmC				
Response Times (in seconds)	Average	Maximum	90 %-tile		
New-Order	0.46	5.11	0.67		
Payment	0.29	4.31	0.48		
Delivery	0.16	0.77	0.30		
Stock Level	2.19	5.01	3.43		
Order Status	0.33	4.91	0.53		
Delivery (Deferred)	0.61	2.08	0.91		
Menu	0.16	0.79	0.30		
Transaction Mix (in perc	ent of total transactions)	Total Occurrences	Percent		
New-Order		1,864,047	44.87		
Payment		1,787,404	43.02		
Delivery		168,544	4.06		
Stock-Level		167,841	4.04		
Order Status		166,736	4.01		
Emulation Delay (in seconds)		Response Time	Menu		
New-Order		0.1	0.1		
Payment		0.1	0.1		
Delivery		0.1	0.1		
Stock-Level		0.1	0.1		
Order Status		0.1	0.1		
Keying/Think Times (in seconds)	Average	Minimum	Maximum		
New Order	18.01 / 12.05	18.00 / 0.00	18.07 / 120.50		
Payment	3.01 / 12.05	3.00 / 0.00	3.07 / 120.50		
Delivery	2.01 / 5.07	2.00 / 0.00	2.06 / 50.50		
Stock Level	2.01 / 5.03	2.00 / 0.00	2.06 / 50.49		
Order Status	2.01 / 10.04	2.00 / 0.00	2.06 / 100.50		
Test Duration					
Ramp-up time		25 minutes			
Measurement interval	120 minutes				
Number of transactions (a	4,323,094				
Ramp-down time	39 minutes				
Number of checkpoints in		4			
Checkpoint interval	30 minutes				

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# **Preface**

The TPC Benchmark  $^{\text{TM}}$  C was developed by the Transaction Processing Performance Council (TPC). The TPC was founded to define transaction processing benchmarks and to disseminate objective, verifiable performance data to the industry. This full disclosure report is based on the TPC Benchmark C Standard Specification Version 5.0.

The TPC describes this benchmark in Clause 0.1 of the specification as follows:

TPC Benchmark C is an On Line Transaction Processing (OLTP) workload. It is a mixture of read-only and update-intensive transactions that simulate the activities found in complex OLTP application environments. It does so by exercising a breadth of system components associated with environments, which are characterized by:

- The simultaneous execution of multiple transaction types that span a breadth of complexity
- On-line and deferred transaction execution modes
- · Multiple on-line terminal sessions
- Moderate system and application execution time
- · Significant disk input/output
- Transaction integrity (ACID properties)
- · Non-uniform distribution of data access through primary and secondary keys
- Databases consisting of many tables with a wide variety of sizes, attributes and relationships
- Contention on data access and update

The performance metric reported by TPC-C is a "business throughput" measuring the number of orders processed per minute. Multiple transactions are used to simulate the business activity of processing an order, and each transaction is subject to a response time constraint. The performance metric for this benchmark is expressed in transactions-per-minute-C (tpmC). To be compliant with the TPC-C standard, all references to tpmC results must include the tpmC rate, the associated price-per-tpmC, and the availability date of the priced configuration.

Despite the fact that this benchmark offers a rich environment that emulates many OLTP applications, this benchmark does not reflect the entire range of OLTP requirements. In addition, the extent to which a customer can achieve the results reported by a vendor is highly dependent on how closely TPC-C approximates the customer application. The relative performance of systems derived from this benchmark does not necessarily hold for other workloads or environments. Extrapolations to any other environment are not recommended.

Benchmark results are highly dependent upon workload, specific application requirements, and systems design and implementation. Relative system performance will vary as a result of these and other factors. Therefore, TPC-C should not be used as a substitute for a specific customer application benchmarking when critical capacity planning and/or product evaluation decisions are contemplated.

# **General Items**

#### **Benchmark Sponsor**

A statement identifying the benchmark sponsor(s) and other participating companies must be provided.

This benchmark was sponsored by International Business Machines Corporation.

# **Application Code Disclosure and Definition Statements**

The application program (as defined in Clause 2.1.7) must be disclosed. This includes, but is not limited to, the code implementing the five transactions and the terminal input and output functions.

Appendix A contains all source code implemented in this benchmark.

# **Parameter Settings**

Settings must be provided for all customer-tunable parameters and options that have been changed from the defaults found in actual products, including but not limited to:

- Database tuning options
- Recovery/commit options
- Consistency/locking options
- Operating system and application configuration parameters.
- Compilation and linkage options and run-time optimizations used to create/install applications, OS, and/or databases.

This requirement can be satisfied by providing a full list of all parameters and options.

Appendix C contains the tunable parameters for the database, the operating system, and the transaction monitor.

### **Configuration Diagrams**

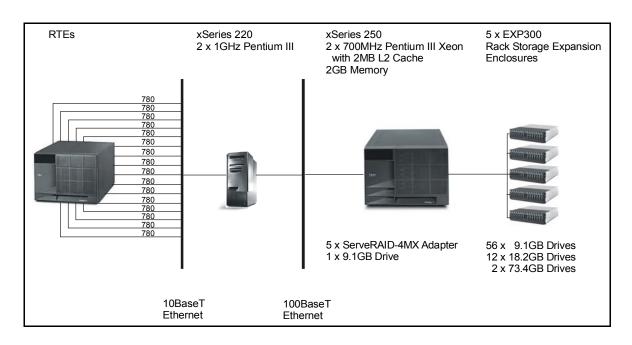
Diagrams of both measured and priced configurations must be provided, accompanied by a description of the differences.

The configuration diagrams for the tested and priced systems are provided on the following pages.

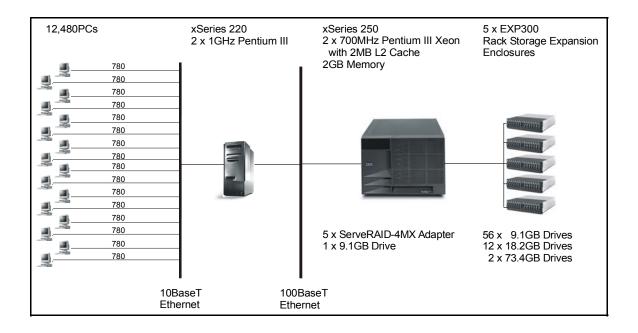
The Remote Terminal Emulator (RTE) used for these TPC Benchmark C tests is the Microsoft BenchCraft RTE. Under Version 5.0, the components of the configuration being emulated by the RTE are the workstations and the Ethernet hubs. Appendix C contains a listing of the RTE scripts and inputs used in the benchmark testing.

The benchmarked configuration used an IBM xSeries 250 system as the client, which executed the terminal I/O and submitted transactions to COM+ servers, which are also running on the clients. These COM+ servers forwarded the transaction requests to the server, and returned the results to the RTE. Microsoft SQL Server 2000 Standard Edition is the DBMS executing on the server

# Measured Configuration



# **Priced Configuration**



# Clause 1: Logical Database Design Related Items

#### **Table Definitions**

Listings must be provided for all table definition statements and all other statements used to set up the database. Appendix B contains the code used to define and load the database tables.

#### **Physical Organization of the Database**

The physical organization of tables and indexes within the database must be disclosed.

Physical space was allocated to Microsoft SQL Server on the server disks as detailed in Figure 4-2.

# **Insert and Delete Operations**

It must be ascertained that insert and/or delete operations to any of the tables can occur concurrently with the TPC-C transaction mix. Furthermore, any restriction in the SUT database implementation that precludes inserts beyond the limits defined in Clause 1.4.11 must be disclosed. This includes the maximum number of rows that can be inserted and the maximum key value for these new rows.

All insert and delete functions were fully operational during the running of the benchmark. The space required for an additional 5 percent of the initial table cardinality was allocated to Microsoft SQL Server 2000 and priced as static space.

# **Horizontal or Vertical Partitioning**

While there are few restrictions placed upon horizontal or vertical partitioning of tables and rows in the TPC-C benchmark (see Clause 1.6), any such partitioning must be disclosed.

Partitioning was not used in this benchmark.

### Replication

Replication tables, if used, must be disclosed (see Clause 1.4.6).

Replication was not used in this benchmark.

#### **Table Attributes**

Additional and/or duplicated attributes in any table must be disclosed, along with a statement on the impact on performance (see Clause 1.4.7).

No additional attributes were used in this benchmark.

# Clause 2: Transaction and Terminal Profiles Related Items

#### **Random Number Generation**

The method of verification for the random number generation must be disclosed.

The seeds and offsets for the random number generator were collected and verified to be different for each driver. The auditor selected samples of the generated numbers from the database. The samples were verified to have no discernible patterns.

### **Screen Layout**

The actual layouts of the terminal input/out screens must be disclosed.

All screen layouts followed the TPC Benchmark C Standard Specification.

#### **Terminal Verification**

The method used to verify that the emulated terminals provide all the features described in Clause 2.2.2.4 must be explained. Although not specifically priced, the type and model of the terminals used must for the demonstration in 8.1.3.3 must be disclosed and commercially available (including supporting software and maintenance).

The auditor verified terminal features by direct experimentation. The benchmarked configuration uses Microsoft Internet Explorer 5.0 and HTML scripts as the terminal interface.

# **Intelligent Terminals**

Any usage of presentation managers or intelligent terminals must be explained.

The terminals emulated in the priced configuration are IBM PC desktop computer systems. All processing of the input/output screens was handled by the xSeries 220 client. The screen input/output was managed via HTML strings that comply with the HTML Version 2.0 specification. A listing of the code used to implement the intelligent terminals is provided in Appendix A. All data manipulation was handled by the xSeries 250 database server.

#### **Transaction Profiles**

The percentage of home and remote order-lines in the New-Order transactions must be disclosed. The percentage of New-Order transactions that were rolled back as a result of an unused item number must be disclosed.

The number of items per orders entered by New-Order transactions must be disclosed. The percentage of home and remote Payment transactions must be disclosed. The percentage of Payment and Order-Status transactions that used non-primary key (C LAST) access to the database must be disclosed.

The percentage of Delivery transactions that were skipped as a result of an insufficient number of rows in the NEW-ORDER table must be disclosed.

The mix (i.e., percentages) of transaction types seen by the SUT must be disclosed.

**Table 2-1. Transaction Statistics** 

New Order	Value (%)
Home warehouse order lines	99.00
Remote warehouse order lines	1.00
Rolled back transactions	1.00
Average number of items per order	10.00
Payment	
Home warehouse payment transactions	85.03
Remote warehouse payment transactions	14.97
Non-Primary Key Access	
Payment transactions using C_LAST	60.08
Order-Status transactions using C_LAST	60.38
Delivery	
Delivery transactions skipped	0
Transaction Mix	
New-Order	44.87
Payment	43.02
Delivery	4.06
Stock Level	4.04
Order Status	4.01

# **Deferred Delivery Mechanism**

The queuing mechanism used to defer execution of the Delivery transaction must be disclosed.

The deferred delivery operation is queued by making an entry in an array within the application process (tpcc.dll) running on the client. Background threads within the application asynchronously process the queued delivery transactions.

The source code is listed in Appendix A.

# Clause 3: Transaction and System Properties Related Items

The results of the ACID test must be disclosed, along with a description of how the ACID requirements were met. This includes disclosing which case was followed for the execution of Isolation Test 7.

## **Atomicity Requirements**

The system under test must guarantee that database transactions are atomic; the system will either perform all individual operations on the data, or will assure that no partially completed operations leave any effects on the data.

All ACID tests were conducted according to specification.

## **Completed Transactions**

The following steps were performed to verify the Atomicity of completed transactions.

- 1. The balance was retrieved from the CUSTOMER table for a random Customer, District and Warehouse, giving BALANCE 1.
- 2. The Payment transaction was executed for the Customer, District and Warehouse used in step 1.
- 3. The balance was retrieved again for the Customer used in step 1 and step 2, giving BALANCE\_2. It was verified that BALANCE\_1 was greater than BALANCE\_2 by AMT.

#### **Aborted Transactions**

The following steps were performed to verify the Atomicity of the aborted Payment transaction:

- 1. The Payment application code was changed to execute a rollback of the transaction instead of performing the commit.
- 2. Using the balance, BALANCE\_2, from the CUSTOMER table retrieved for the completed transaction, the Payment transaction was executed for the Customer, District and Warehouse used in step 1 of section 3.1.1. The transaction rolled back due to the change in the application code from step 1.
- 3. The balance was retrieved again for the Customer used for step 2, giving BALANCE\_3. It was verified that BALANCE\_2 was equal to BALANCE\_3.

#### **Consistency Requirements**

Consistency is the property of the application that requires any execution of a database transaction to take the database from one consistent state to another, assuming that the database is initially in a consistent state.

Consistency conditions one through four were tested using a shell script to issue queries to the database. The results of the queries demonstrated that the database was consistent for all four tests.

#### **Isolation Requirements**

Sufficient conditions must be enabled at either the system or the application level to ensure that the required isolation defined in Clause 3.4.1 is obtained.

Isolation tests one through seven were run using shell scripts to issue queries to the database. Each script included timestamps to demonstrate the concurrency of operations. The results of the queries were captured and placed in files. The auditor reviewed the results and verified that the isolation requirements had been met.

In addition, the phantom tests and the stock-level tests were run and verified.

Case A was followed for Isolation test seven.

#### **Durability Requirements**

The tested system must guarantee durability: the ability to preserve the effects of committed transactions and ensure database consistency after recovery from any one of the failures listed in Clause 3.5.3.

- Permanent irrecoverable failure of any single durable medium containing TPC-C database tables or recovery log data (this test includes failure of all or part of memory)
- Instantaneous interruption (system crash/system hang) in processing that requires system reboot to recover
- Failure of all or part of memory (loss of contents)

#### Loss of Data Test

The following steps were successfully performed to pass the Durability test of failure of a disk unit with database tables:

- 1. The contents of the database were backed up to several database dump devices during the initial database load. There were no dump devices on the disk array from which a drive was removed as part of this test.
- 2. The current count of the total number of orders was determined by the sum of D\_NEXT\_O\_ID for all rows in the district table giving SUM1.
- 3. A test was started with 150 users submitting transactions.
- 4. A disk containing a portion of each of the tables in the tpcc database was removed causing SQL Server to report errors accessing that device.
- 5. The run was aborted and SQL Server was restarted. Upon restart, the database tpcc reported numerous errors relating to the failed database device.
- 6. The transaction log was dumped to disk and the failed disk was replaced with a spare disk and was recovered.
- 7. The database was recovered and restored from the backup dump devices. Afterwards, the transaction log was applied to the database.
- 8. Step 2 was repeated to obtain the current count of the total number of orders giving SUM2.
- 9. It was verified that the sum of D\_NEXT\_O\_ID after the database is recovered is greater than or equal to the sum of D\_NEXT\_O\_ID before the run, plus all new order transactions completed during the run minus any rollback transactions.
- 10. Consistency Condition 3 was verified.

# Combined Loss of Log and Loss of System Test (Instantaneous Interruption and Loss of Memory)

- 1. The current count of the total number of orders was determined by the sum of D\_NEXT\_O\_ID for all rows in the district table gving SUM1.
- 2. A test was started under full load with all users submitting transactions.
- 3. One disk from the log array was removed. Since the disk was RAID-1 mirrored, SQL Server continued to process transactions without interruption.
- 4. The test continued under full load with all users submitting transactions. A checkpoint was issued, and the system continued to run for another 5 minutes.
- 5. The server under test was powered off, which removed power from the system and the memory.
- 6. The server was powered on again.
- 7. SQL Server was started to initiate automatic recovery from its log.
- 8. Step 1 was repeated to obtain the current count of the total number of orders giving SUM2.
- 9. It was verified that the sum of D\_NEXT\_O\_ID after the database is recovered is greater than or equal to the sum of D\_NEXT\_O\_ID before the run, plus all new order transactions completed during the run minus any rollback transactions.

# Clause 4: Scaling and Database Population Related Items

# **Cardinality of Tables**

The cardinality (e.g., the number of rows) of each table, as it existed at the start of the benchmark run (see Clause 4.2), must be disclosed. If the database was over-scaled and inactive rows of the WAREHOUSE table were deleted (see Clause 4.2.2), the cardinality of the WAREHOUSE table as initially configured and the number of rows deleted must be disclosed.

The database was originally built with 12,480 warehouses, and the audited run used all 12,480 warehouses.

**Table 4-1. Initial Cardinality of Tables** 

Table Name	Rows
Warehouse	1,248
District	12,480
Item	100,000
New Order	11,232,000
History	37,440,000
Orders	37,440,000
Customer	37,440,000
Order Line	374,408,027
Stock	124,800,000
Inactive Warehouses	0

#### **Distribution of Tables and Logs**

The distribution of tables and logs across all media must be explicitly depicted for the tested and priced systems.) Figure 4-2 depicts the database configuration of the tested system to meet the 8-hour steady state requirement.

Figure 4-2. Data Distribution for the Benchmarked Configuration

Controller	Drives	Partition	Size	Use
1	14 - 9.1GB	F: Y:	20050MB 70000MB (NTFS)	Customer and Stock Backup 1
2	14 - 9.1GB	G: Z:	20050MB 70000MB (NTFS)	Customer and Stock Backup 2
3	14 - 9.1GB	H: U:	20050MB 70000MB (NTFS)	Customer and Stock Backup 3
4	14 - 9.1GB	I: V:	20050MB 70000MB (NTFS)	Customer and Stock Backup 4
5	12 - 18.2GB 2 - 73.4GB	J: K:	35050MB 45050MB	Misc. Log File

# **Database Model Implemented**

A statement must be provided that describes:

- 1. The database model implemented by the DBMS used (e.g., relational, network, hierarchical)
- 2. The database interface (e.g., embedded, call level) and access language (e.g., SQL, DL/1, COBOL, read/write) used to implement the TPC-C transactions. If more than one interface/access language is used to implement TPC-C, each interface/access language must be described and a list of which interface/access language is used with which transaction type must be disclosed.

Microsoft SQL Server 2000 Standard Edition is a relational database. The interface used was Microsoft SQL Server stored procedures accessed with Remote Procedure Calls embedded in C code using the Microsoft DBLIB interface.

#### **Partitions/Replications Mapping**

The mapping of database partitions/replications must be explicitly described.

The database was neither partitioned nor replicated.

#### **60-Day Space Requirement**

Details of the 60-day space computations, along with proof that the database is configured to sustain 8 hours of growth for the dynamic tables (Order, Order-Line, and History) must be disclosed (see Clause 4.2.3).

See Appendix D for details about how the 60-day space requirements were calculated.

# Clause 5: Performance Metrics and Response Time Related Items

## Measured tpmC

Measured tpmC must be reported.

Measured tpmC: 15,533.72 tpmC

Price per tpmC: \$4.67 per tpmC

# **Response Times**

Ninetieth percentile, maximum and average response times must be reported for all transaction types as well as for the Menu response time.

The TPC-C requirements for the average response time and the 90th percentile were met. Table 5-1 provides the response times for each of the transaction types and the menu for the measured system.

Table 5-1. Response Times in Seconds

Transaction Type	Average	Maximum	90%-tile
New-Order	0.46	5.11	0.67
Payment	0.29	4.31	0.48
Delivery	0.16	0.77	0.30
Stock Level	2.19	5.01	3.43
Order Status	0.33	4.91	0.53
Delivery (Deferred)	0.61	2.08	0.91
Menu	0.16	0.79	0.30

## **Keying/Think Times**

The minimum, the average, and the maximum keying and think times must be reported for each transaction type.) Table 5-2 lists the keying/think times for the measured system.

Table 5-2. Keying/Think Times

Transaction Type	Average	Minimum	Maximum
New-Order	18.01 / 12.05	18.00 / 0.00	18.07 / 120.50
Payment	3.01 / 12.05	3.00 / 0.00	3.07 / 120.50
Delivery	2.01 / 5.07	2.00 / 0.00	2.06 / 50.50
Stock Level	2.01 / 5.03	2.00 / 0.00	2.06 / 50.49
Order Status	2.01 / 10.04	2.00 / 0.00	2.06 / 100.50

# **Response Time Frequency Distribution Curves**

Response time frequency distribution curves (see Clause 5.6.1) must be reported for each transaction type.

Figure 5-1. New-Order Transaction - Response Time Frequency Distribution

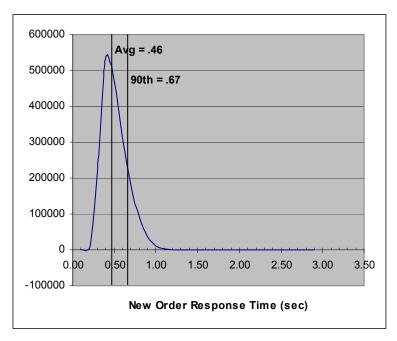


Figure 5-2. Payment Transaction - Response Time Frequency Distribution

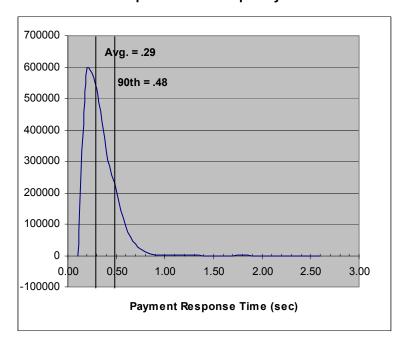


Figure 5-3. Order-Status Transaction - Response Time Frequency Distribution

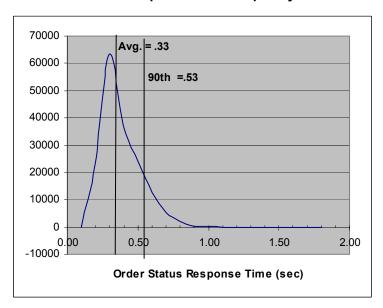
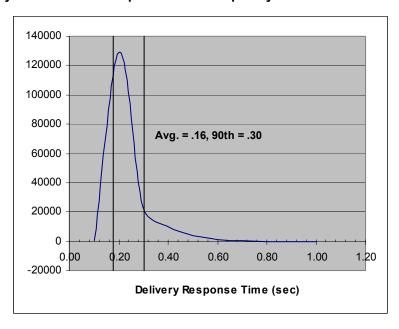


Figure 5-4. Delivery Transaction - Response Time Frequency Distribution



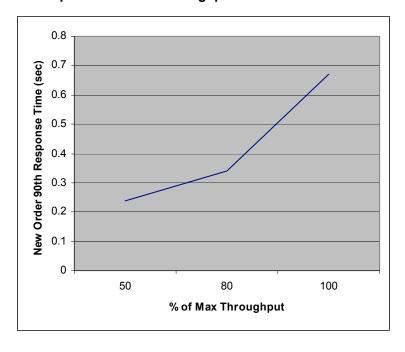
16000 14000 12000 10000 8000 6000 4000 2000 0 2 4 6 8 101214161820222426283032343638404244464850 Stock level Response Time (sec)

Figure 5-5. Stock-Level Transaction - Response Time Frequency Distribution

# Performance Curve for Response Time vs. Throughput

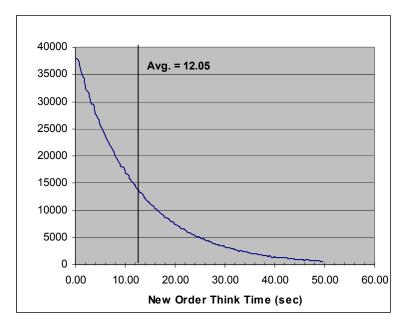
The performance curve for response time vs. throughput (see Clause 5.6.2) must be reported for the New-Order transaction.

Figure 5-6. New-Order Response Time vs. Throughput



#### **New Order Think Time Distribution**

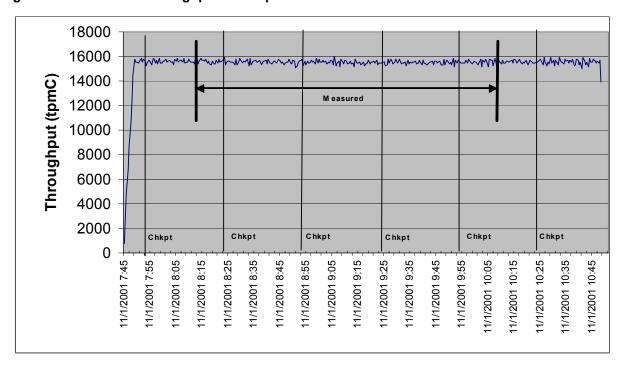
Figure 5-7. New-Order Think Time Distribution



# Throughput vs. Elapsed Time

A graph of throughput vs. elapsed time (see Clause 5.6.5) must be reported for the New-Order transaction.

Figure 5-8. New-Order Throughput vs. Elapsed Time



#### **Steady State Methodology**

The method used to determine that the SUT had reached a steady state prior to commencing the measurement interval (see Clause 5.5) must be described.

Figure 5-8 shows that the system was in steady state at the beginning of the measurement interval.

# Work Performed during Steady State

A description of how the work normally performed during a sustained test (e.g., checkpointing, writing redo/undo log records) actually occurred during the measurement interval must be reported.

#### Transaction Flow

The RTE generated the required input data to choose a transaction from the menu. This data was time-stamped. The response for the requested transaction was verified and time-stamped in the RTE log files.

The RTE generated the required input data for the chosen transaction. It waited to complete the minimum required key time before transmitting the input screen. The transmission was time-stamped. The return of the screen with the required response data was time-stamped. The difference between these two time-stamps was the response time for that transaction and was logged in the RTE log. The RTE then waited the required think time interval before repeating the process starting at selecting another transaction from the menu.

The RTE transmissions were sent to application processes running on the client machines through Ethernet LANs. These client application processes handled all screen I/O as well as all requests to the database on the server. The applications communicated with the database server over another Ethernet LAN using Microsoft SQL Server DBLIB library and RPC calls.

# Checkpoints

Checkpoints were executed on the server during the ramp-up phase and at 30-minute intervals. The measured run contained four checkpoints. SQL Server was started with trace flag 3502, which caused it to log the occurrence of the checkpoint. This information was used to verify that the checkpoints occurred at the appropriate times during the test run.

During a checkpoint, SQL Server flushes all dirty pages from its cache to disk. It places a record in the database transaction log indicating that the checkpoint has completed and that all transactions, which were committed prior to the checkpoint have been written to disk.

#### Measurement Interval

A statement of the duration of the measurement interval for the reported Maximum Qualified Throughput (tpmC) must be included.

The measurement interval was 120 minutes.

#### **Transaction Mix**

The method of regulation of the transaction mix (e.g., card decks or weighted random distribution) must be described. If weighted distribution is used and the RTE adjusts the weights associated with each transaction type, the maximum adjustments to the weight from the initial value must be disclosed. (8.1.6.13)

See Table 5-3

The RTE was given a weighted random distribution, which was not adjusted during the run.

# **Percentage of Total Mix**

The percentage of the total mix for each transaction type must be disclosed. See Table 5-3.

Table 5-3. Transaction Statistics and Transaction Mix

New Order	Value (%)
Home warehouse order lines	99.00
Remote warehouse order lines	1.00
Rolled back transactions	1.00
Average number of items per order	10.00
Payment	
Home warehouse payment transactions	85.03
Remote warehouse payment transactions	14.97
Non-Primary Key Access	
Payment transactions using C_LAST	60.08
Order-Status transactions using C_LAST	60.38
Delivery	
Delivery transactions skipped	0
Transaction Mix	
New-Order	44.87
Payment	43.02
Delivery	4.06
Stock Level	4.04
Order-Status	4.01

## **Number of Checkpoints**

The number of checkpoints in the Measurement Interval, the time in seconds from the start of the Measurement Interval to the first checkpoint, and the Checkpoint Interval must be disclosed.

Checkpoints were performed during the ramp-up period and during each measured run interval. The first measurement interval checkpoint started 13 minutes and 35 seconds after the start of the measurement interval. The four checkpoints in the measured interval are shown in Table 5-4.

Table 5-4. Checkpoint Start Time and Duration

Checkpoint	Start Time	Duration	
1	08:43:45 a.m.	7 minutes 45 seconds	
2	08:53:43 a.m.	8 minutes 10 seconds	
3	09:23:41 a.m.	8 minutes 33 seconds	
4	09:53:39 a.m.	8 minutes 59 seconds	

The checkpoints were verified to be clear of the protected zones around the beginning and end of the measurement intervals. The checkpoint interval was 30 minutes.

# Clause 6: SUT, Driver and Communication Definition Related Items

## **Description of RTE**

The RTE input parameters, code fragments, functions, etc., used to generate each transaction input field must be disclosed.

The RTE used was Microsoft BenchCraft RTE. Benchcraft is a proprietary tool provided by Microsoft and is not commercially available. The RTE input is listed in Appendix C.

### **Emulated Components**

It must be demonstrated that the functionality and performance of the components being emulated in the Driver System are equivalent to that of the priced system. The results of the test described in Clause 6.6.3.4 must be disclosed.

No components were emulated.

## **Benchmarked and Targeted System Configuration Diagrams**

A complete functional diagram of both the benchmarked configuration and the configuration of the proposed (target) system must be disclosed. A detailed list of all software and hardware functionality being performed on the Driver System, and its interface to the SUT must be disclosed (see Clause 6.6.3.6).

The driver RTE generated the transaction input data and transmitted it to the client in HTML format. The driver RTE received the output from the System under Test, time-stamped it, and forwarded it to the Master RTE for post-test processing. No other functionality was included on the driver RTE.

Detailed diagrams of the benchmarked and priced configurations are provided in the section called "General Items" at the beginning of this document.

#### **Network Configuration**

The network configurations of both the tested services and the proposed (target) services which are being represented and a thorough explanation of exactly which parts of the proposed configuration are being replaced with the Driver System must be disclosed (see Clause 6.6.4).

See the measured and priced configuration diagrams (pages 12 and 13) for details about the network configuration.

#### **Network Bandwidth**

The bandwidth of the network(s) used in the tested/priced configuration must be disclosed.

The Ethernet used in the LAN complies with the IEEE.802.3 standard. The LANs that connected the driver RTEs to the clients had a bandwidth of 10Mbps. The LAN that connected the client to the server had a bandwidth of 100Mbps.

# **Operator Intervention**

If the configuration requires operator intervention (see Clause 6.6.6), the mechanism and the frequency of this intervention must be disclosed.

The configuration did not require any operator intervention to sustain the reported throughput.

# **Clause 7: Pricing Related Items**

## **Hardware and Software Components**

A detailed list of the hardware and software used in the priced system must be reported. Each separately orderable item must have a vendor part number, description and release/revision level, and either general availability status or committed delivery date. If package-pricing is used, vendor part number of the package and a description uniquely identifying each of the components of the package must be disclosed.

Pricing source(s) and effective date(s) must also be reported.

The total 3-year price of the entire configuration must be reported, including: hardware, software, and maintenance charges. Separate component pricing is recommended. The basis of all discounts used must be disclosed.

A detailed list of all hardware and software, including the 3-year price, is provided in the Executive Summary at the front of this report. All third-party quotations are included in Appendix E at the end of this document.

#### **Availability Date**

The committed delivery date for general availability (availability date) of products used in the price calculations must be reported. When the priced system includes products with different availability dates, the reported availability for the priced system must be the date at which all components are committed to be available.

All hardware and software used in this benchmark are currently available.

## Measured tpmC

A statement of the measured tpmC, as well as the respective calculations for the 3-year pricing, price/performance (price/tpmC) and the availability date must be included.

Maximum Qualified Throughput: 15,533.72 tpmC
 Price per tpmC: \$4.67 per tpmC
 ↑ Three-year cost of ownership: \$72,487

# **Country-Specific Pricing**

Additional Clause 7 related items may be included in the Full Disclosure Report for each country-specific priced configuration. Country-specific pricing is subject to Clause 7.1.7.

The configuration is priced for the United States of America.

#### **Usage Pricing**

For any usage pricing, the sponsor must disclose:

- Usage level at which the component was priced.
- A statement of the company policy allowing such pricing.

The component pricing based on usage is shown below:

- 2 Microsoft Windows 2000 Server
- 2 Microsoft SQL Server 2000 Standard Edition (based on per-processor price)
- 3-year support for hardware components (except for components for which 10 percent spares are provided)

# **System Pricing**

System pricing should include subtotals for the following components: Server Hardware, Server Software, Client Hardware, Client Software, and Network Components used for terminal connection (see Clause 7.2.2.3). System pricing must include line item indication where non-sponsoring companies' brands are used. System pricing must also include line item indication of third-party pricing.

A detailed list of all hardware and software, including the 3-year price, is provided in the Executive Summary at the front of this report. All third-party quotations are included in Appendix E at the end of this document.

# Clause 9: Audit Related Items

#### **Auditor**

The auditor's name, address, phone number, and a copy of the auditor's attestation letter indicating compliance must be included in the Full Disclosure Report.

This implementation of the TPC-C benchmark was audited by Bradley J. Askins of InfoSizing, Inc. The auditor's attestation letter is provided in this section.

## **Availability of the Full Disclosure Report**

The Full Disclosure Report must be readily available to the public at a reasonable charge, similar to the charges for similar documents by the test sponsor. The report must be made available when results are made public. In order to use the phrase "TPC Benchmark"C," the Full Disclosure Report must have been submitted to the TPC Administrator as well as written permission obtained to distribute same.

Requests for the TPC Benchmark C Full Disclosure Report should be sent to:

TPC 404 Balboa Street San Francisco, CA 94118





Benchmark Sponsor: Richard Laviano

Manager., xSeries Performance

IBM Server Group 3039 Cornwallis Road

Research Triangle Park, NC 27709

November 5, 2001

I verified the TPC Benchmark™ C performance for the following Client/Server configuration:

Platform: IBM @server xSeries 250 c/s

Operating system: Microsoft Windows 2000 Server

Database Manager: Microsoft SQL Server 2000 Standard Edition

Transaction Manager: Microsoft COM+

#### The results were:

CPU's Speed	Memory	Disks	NewOrder 90% Response Time	tpmC		
Server: IBM @server xSeries 250						
2 x Pentium III Xeon (700 MHz)	2 GB Main (2MB L2 Cache per processor)	2 x 73.4 GB 12 x 18.2 GB 57 x 9.1 GB	0.67 Seconds	15,533.72		
IBM @server xSeries 220 (Specification for each)						
2 x Pentium III (1 GHz)	640 MB Main (256KB L2 Cache per processor	1 x 9.1 GB	n/a	n/a		

In my opinion, these performance results were produced in compliance with the TPC's requirements for the benchmark. The following verification items were given special attention:

• The database records were the proper size

- The database was properly scaled and populated
- The required ACID properties were met
- The transactions were correctly implemented
- Input data was generated according to the specified percentages
- The transaction cycle times included the required keying and think times
- The reported response times were correctly measured.
- All 90% response times were under the specified maximums
- At least 90% of all delivery transactions met the 80 Second completion time limit
- The reported measurement interval was 120 minutes (7200 seconds)
- The reported measurement interval was representative of steady state conditions
- Four checkpoints were taken during the reported measurement interval
- The 60 day storage requirement was correctly computed
- The system pricing was verified for major components and maintenance

Respectfully Yours,

François Raab, President

Bradley J. Askins, Auditor

# **Appendix A: Source Code**

# client\_utils.c

```
/* client_utils.c
#include <stdio.h>
#include <time.h>
#include <windows.h>
#include <winperf.h>
#include <winsock.h>
#include "client utils.h"
#define Li2Double(x) ((double)((x).HighPart) * 4.294967296E9 +
(double)((x).LowPart))
static LARGE_INTEGER pFreq;
static double sFreq;
static int print thread id = 1;
static int user_id = 0;
static char *user code = "C";
   get thread id
     A function that returns the thread ID of the current thread
*/
static int get_thread_id()
  return(GetCurrentThreadId());
   get_prefix
           Format the output prefix for printing:
           It contains the user_id, 'C' or 'T' depending on whether it
           is a terminal or a client and optional a thread identifier
           The prefix is written in the buffer passed in by the caller.
static void get_prefix(char *buffer)
  if (print_thread_id) {
                       int thread_id = get_thread_id();
                      sprintf(buffer, "%s(%d-%s-%d)%s".
                      user id < 10?" ": user id < 100?" ": "",
                       user_id,
                       user_code,
                       thread id,
                       thread_id < 10 ? " " : "");
  } else {
                       sprintf(buffer, "%s(%2d-%s)",
                      user id < 10?"": "", user id, user code);
     A var-arg function that appends the current time and
     other data to the print request and sends it to stderr
     if it is not a web client, to a file if it is
void err_printf(char *format, ...)
  time_t cur_timet;
  char time_str[30];
```

```
char line_prefix[50];
  va_list ap;
  va_start(ap, format);
  cur timet = time(&cur timet);
  strftime(time str, 29, "%X", localtime(&cur timet));
  get_prefix(line_prefix);
  fprintf(ERROUT, "%s %s - ", line_prefix, time_str);
  vfprintf(ERROUT, format, ap);
  fflush(ERROUT);
  va_end(ap);
  encina error message
  Report an encina error message by interpreting it and writing
* it to both the logfile (if any) and to standard error
void encina_error_message(char *msg, unsigned long n)
  char errorMsg[ENCINA MAX STATUS STRING SIZE];
  encina_StatusToString(n, ENCINA_MAX_STATUS_STRING SIZE,
  err_printf("ERROR: %s. Error code = %s (%d 0x%x) \n", msg, errorMsg, n,
n);
int get time init()
   QueryPerformanceFrequency(&pFreq);
  sFreq=Li2Double(pFreq);
  return 0;
int get local time(time type *timeP)
  double cur t;
  LARGE_INTEGER counter;
  QueryPerformanceCounter(&counter);
  cur t = Li2Double(counter) / sFreq;
  timeP->sec = (long)cur t;
   timeP->usec = ((long)cur_t - timeP->sec) * 1000000;*/
  timeP->usec = (long)((cur t - timeP->sec) * 1000000);
          return 0:
  time diff ms
     Return the difference in miliseconds between two times
int time_diff_ms(struct timeval *t2, struct timeval *t1)
  int t_diff;
  t diff = (t2->tv usec + 1000000 - t1->tv usec + 500) / 1000 +
        (t2->tv\_sec - t1->tv\_sec - 1) * 1000;
  return(t_diff);
```

```
* perfClntDataInit:
                                                                             extern char log file name[];
    Initialization for the shared file mapping.
                                                                             extern void logprintf( char *format, ...);
                                                                             extern void err printf( char *format, ...);
                                                                             extern void encina_error_message(char *msg, unsigned long n);
* return: pointer to the shared memory space
                                                                             extern int time_diff_ms(struct timeval *t2, struct timeval *t1);
* This routine creates a named mapped memory section that is used
* to communicate the TPCC performance data to the extensible
                                                                             typedef struct {
* counter DLL for NT perfmon.
                                                                               int num;
                                                                               int errs;
total_tran_count_t *perfCIntDataInit()
                                                                               double RTtotal[2]; // 1 for server RT and 0 for client RT
                                                                               int RTcount;
  HANDLE hMappedObject;
                                                                              tran_info_t;
  total tran count t *pClntInfo = NULL;
  TCHAR szMappedObjectName[] =
TEXT("TPCC_CLNT_COUNTER_BLOCK");
                                                                             * total_tran_count_t
    /* create named section for the performance data */
                                                                             * structure that holds the total count of transaction of each type
    hMappedObject = CreateFileMapping((HANDLE)0xFFFFFFFF,
                                                                             * as well as the reposne times.
             NULL.
             PAGE READWRITE,
                                                                             typedef struct {
            sizeof(total tran count t),
                                                                               tran info t tran[MAX TRAN TYPE + 1];
            szMappedObjectName);
                                                                               int errors;
    if (hMappedObject == NULL) {
                                                                               double time;
       err_printf("perfClntDataInit: CreateFileMapping failed %x\n",
                                                                             total_tran_count_t;
             GetLastError());
       pClntInfo = NULL;
                                                                             /* enc status t
    } else {
                                                                             * structure that holds error information
       /* map the section and assign the counter block pointer
       * to this section of memory
                                                                             typedef struct {
                                                                               int status;
       pClntInfo = (total_tran_count_t *) MapViewOfFile(hMappedObject,
                                                                               int line;
                FILE_MAP_ALL_ACCESS,
                                                                               char file[268];
                                                                               unsigned long encinaError;
                                                                               char errorMsg[ENCINA_MAX_STATUS_STRING_SIZE];
                0.
                0);
                                                                              enc status t;
       if (pClntInfo == NULL) {
         err printf("perfClntDataInit: MapViewOfFile failed %x\n",
                                                                             #define FALSE 0
                                                                             #define TRUE 1
               GetLastError());
                                                                             #define DPRINT(args) if (0) err printf args
       else {
         err_printf("perfClntDataInit: MapViewOfFile success \n");
                                                                             #define CHECK ENVIRON(str,var) if (str == NULL) { fprintf(ERROUT, \
                                                                                                    "%s environment variable is not defined.\n",var); }
  return(pClntInfo);
                                                                             #define CHK_STATUS(st, val, _errMsg)
                                                                                  enc_status.status=val;
                                                                                                        FILE
                                                                                  strcpy(enc status.file,
client utils.h
                                                                                  enc_status.line= __LINE__;
                                                                                  enc status.encinaError = st;
#ifndef TPCC CLIENT UTILS H
                                                                                  if(_errMsg)strcpy(enc_status.errorMsg, _errMsg);
#define TPCC_CLIENT_UTILS_H
                                                                                  if(st!=1) return;
#include <stdio.h>
#include <time.h>
                                                                             #define UTIL IDENT(a)
#include <dce/rpc.h>
#include <dce/dce error.h>
                                                                                    ENCINA C ANSI STRING TOKEN SUPPORT
#include <encina/encina.h>
                                                                             #define UTIL_STRING(a)
                                                                                                           # a
#include <stdlib.h>
                                                                             #define UTIL CONCAT(a, b)
                                                                                                            a ## b
#include <utils/trace.h>
                                                                             #else /* ENCINA_C_ANSI_STRING_TOKEN_SUPPORT */
#include <winsock.h>
                                                                             #define UTIL_STRING(a)
#include "mon client.h"
                                                                             #define UTIL_CONCAT(a, b)
                                                                                                            UTIL IDENT(a)b
#include "../include/tpcc_type.h"
                                                                             #endif /* ENCINA_C_ANSI_STRING_TOKEN_SUPPORT */
extern FILE * errtpcc;
                                                                             /* ENCINA_CALL: Make fail-fast calls on the various services. */
extern FILE *logtpcc;
                                                                             #define ENCINA_CALL(proc_name,call)
extern int debug;
```

```
#ifdef __cplusplus
  unsigned long _status;
                                                                        } /*extern "C" */
  ENCINA CALL RC(proc name, call, status);
                                                                        #endif
  if (_status) exit_program(_status);
                                                                        /* end of generated dlldata file */
#define ENCINA_CALL_RC(proc_name,call,rc)
                                                                        error.h
  char errorMsg[ENCINA MAX STATUS STRING SIZE];
                                                                                 FILE:
                                                                                                     ERROR.H
  DPRINT(("ENCINA_CALL_RC: before call %s\n", proc_name));
                                                                                                               Microsoft TPC-C Kit Ver.
                                                                        4.20.000
                                                                                                               Copyright Microsoft, 1999
  DPRINT(("ENCINA_CALL_RC: after call %s\n", proc_name));
                                                                                 All Rights Reserved
  if (rc) {
                                                                                                               Version 4.10.000 audited by
    encina StatusToString(rc, ENCINA MAX STATUS STRING SIZE,
                                                                        Richard Gimarc, Performance Metrics, 3/17/99
                errorMsg);
                                                                                 PURPOSE:
                                                                                                     Header file for error exception classes.
    err printf( "%x \n", rc);
    err_printf( "%s \n", _errorMsg);
                                                                           Change history:
    err printf( "%s \n", proc name);
                                                                                           4.20.000 - updated rev number to match kit
                                                                                           4.21.000 - fixed bug: ~CBaseErr needed to be declared
                                                                        virtual
void err_printf(char *format, ...);
void encina error message(char *msg, unsigned long n);
                                                                        #pragma once
int get_time_init();
int get local time(time type *timeP);
                                                                        #ifndef_INC_STRING
int time_diff_ms(struct timeval *t2, struct timeval *t1);
                                                                                  #include <string.h>
                                                                        #endif
#endif /* TPCC_CLIENT_UTILS_H */
                                                                        const int m_szMsg_size = 512;
                                                                        const int m szApp size = 64;
dlldata.c
                                                                        const int m_szLoc_size = 64;
//error message structure used in ErrorText routines
 DllData file -- generated by MIDL compiler
                                                                        typedef struct _SERRORMSG
    DO NOT ALTER THIS FILE
                                                                                  int
                                                                                                     iError:
                                                                        //error id of message
 This file is regenerated by MIDL on every IDL file compile.
                                                                                  char
                                                                                           szMsg[256];
                                                                                                                                   //message to
                                                                        sent to browser
 To completely reconstruct this file, delete it and rerun MIDL
                                                                        } SERRORMSG;
 on all the IDL files in this DLL, specifying this file for the
                                                                        #define ERR FATAL LEVEL
 /dlldata command line option
                                                                        #define ERR_WARNING_LEVEL
                                                                                                                         2
**********************
                                                                        #define ERR INFORMATION LEVEL
#include <rpcproxy.h>
                                                                        #define ERR_TYPE_LOGIC
                                                                                                     //logic error in program; internal error
#ifdef __cplusplus
                                                                        #define ERR_SUCCESS
extern "C" {
                                                                                                               //success (a non-error error)
#endif
                                                                        #define ERR_BAD_ITEM_ID
                                                                                                     //expected abort record in txnRecord
EXTERN_PROXY_FILE( tpcc_com_ps )
                                                                        #define ERR_TYPE_DELIVERY_POST
                                                                                           //expected delivery post failed
                                                                        #define
                                                                                  ERR\_TYPE\_WEBDLL
PROXYFILE_LIST_START
                                                                                                               //tpcc web generated error
/* Start of list */
                                                                                  ERR_TYPE_SQL
                                                                        #define
REFERENCE PROXY FILE( tpcc com ps ),
                                                                                                     //sql server generated error
                                                                                 ERR TYPE DBLIB
/* End of list */
                                                                        #define
PROXYFILE_LIST_END
                                                                                                     //dblib generated error
                                                                        #define
                                                                                 ERR TYPE ODBC
                                                                                                     //odbc generated error
                                                                                  6
DLLDATA_ROUTINES( aProxyFileList, GET_DLL_CLSID )
```

```
#define ERR_TYPE_SOCKET
                                                                                    {
                              //error on communication socket client rte
                                                                                             m_idMsg
                                                                                                                  = idMsg;
                                                                                             m_szApp
only
                                                                                                                  = new char[m szApp size];
#define ERR_TYPE_DEADLOCK
                                                                                              m_szMsg
                                                                                                                  = new char[m_szMsg_size];
                              //dblib and odbc only deadlock condition
                                                                                                                  = NULL:
                                                                                              m_szLoc
#define ERR TYPE COM
                              //error from COM call
                                                                                             GetModuleFileName(GetModuleHandle(NULL),
#define ERR TYPE TUXEDO
                                                                          m_szApp, m_szApp_size);
          10
                              //tuxedo error
                                                                                              LoadString(GetModuleHandle(NULL), idMsg,
#define ERR_TYPE_OS
                                                                          m_szMsg, m_szMsg_size);
                                        //operating system error
#define ERR_TYPE_MEMORY
                              //memory allocation error
                                                                                    CBaseErr(LPCTSTR szMsg)
#define ERR_TYPE_TPCC_ODBC
          13
                              //error from tpcc odbc txn module
                                                                                             m idMsg
#define ERR TYPE TPCC DBLIB
                                                                                             m_szApp
                                                                                                                  = new char[m_szApp_size];
          14
                              //error from tpcc dblib txn module
                                                                                             m szMsg
                                                                                                                  = new char[m_szMsg_size];
#define ERR_TYPE_DELISRV
                                                                                              m_szLoc
                                                                                                                  = NULL;
                    //delivery server error
#define ERR TYPE TXNLOG
                                                                                             GetModuleFileName(GetModuleHandle(NULL),
                              //txn log error
          16
                                                                          m_szApp, m_szApp_size);
                                                                                              strcpy(m_szMsg, szMsg);
#define ERR TYPE BCCONN
          17
                              //Benchcraft connection class
#define ERR TYPE TPCC CONN
          18
                              //Benchcraft connection class
                                                                                    void SetError(char *szMsg, LPCTSTR szLocation)
#define ERR_TYPE_ENCINA
                              //Encina error
                                                                                             if (szMsg != NULL)
          19
#define ERR_TYPE_COMPONENT
                                                                                                        strcpy(m_szMsg, szMsg);
          20
                              //error from COM component
                                                                                             else
#define ERR_TYPE_RTE
                                                                                                       m_szMsg[0] = 0;
          21
                              //Benchcraft rte
#define ERR_TYPE_AUTOMATION
                                                                                             if (szLocation != NULL)
          22
                              //Benchcraft automation errors
                                                                                                        delete [] m szLoc;
                                                                                                        m_szLoc = new char[strlen(szLocation)+1];
class CBaseErr
                                                                                                        strcpy(m szLoc, szLocation);
public:
                                                                                             else
          char
                    *m_szApp;
                                                                                                        delete [] m_szLoc;
          char
                    *m_szMsg;
                    *m szLoc;// code location where the error occurred
                                                                                                        m szLoc = NULL;
          char
          int
                              m_idMsg;
                                                                                    }
          CBaseErr(void)
                                                                                    virtual void Draw(HWND hwnd, LPCTSTR szStr = NULL)
                    m_idMsg
                    m szMsg
                                        = new char[m szMsg size];
                                                                                             int
                    m szApp
                                        = new char[m szApp size];
                                                                                             char
                                                                                                        szTmp[512];
                                        = NULL;
                    m_szLoc
                                                                                             if (szStr)
                                                                                                        j = wsprintf(szTmp, "%s\n",szStr);
                    m_szMsg[0]
                                        = 0.
                    m szApp[0]
                                        = 0;
                                                                                             if (m szLoc)
                                                                                                         += wsprintf(szTmp+j,
                    GetModuleFileName(GetModuleHandle(NULL),
                                                                          "Location=%s\n",m szLoc);
m_szApp, m_szApp_size);
                                                                                                       j += wsprintf(szTmp+j, "%s\n", m_szMsg);
          }
          virtual ~CBaseErr(void)
                                                                                             ::MessageBox(hwnd, szTmp, m_szApp, MB_OK);
                    if (m_szMsg)
                                                                                    char *GetApp(void) { return m szApp; }
                              delete [] m_szMsg;
                    if (m_szApp)
                                                                                    char *GetMsg(void) { return m_szMsg; }
                                                                                    char *GetLocation(void) { return m_szLoc; }
                              delete [] m_szApp;
                    if (m_szLoc)
                                                                                    virtual int ErrorType() = 0;
                                                                                                                  // a value which distinguishes the
                              delete [] m_szLoc;
          };
                                                                          kind of error that occurred
                                                                                    virtual int ErrorNum() = 0;
                                                                                                                            // an error value
          CBaseErr(int idMsg)
                                                                          specific to the error type
```

```
virtual char *ErrorText() = 0;
                                        // a string (i.e., human readable)
                                                                          public:
representation of the error
                                                                                    CMemoryErr(void);
                                                                                    int ErrorType() { return ERR_TYPE_MEMORY;}
                                                                                    int ErrorNum() { return 0;}
class CSocketErr: public CBaseErr
                                                                                    char *ErrorText() { return "Insufficient Memory to continue.";}
                                                                          };
public:
          enum Action
                                                                          install.c
                    eNone,
                                                                                    FILE:
                                                                                                         INSTALL.C
                    eSend
                                                                                                                   Microsoft TPC-C Kit Ver.
                    eSocket,
                                                                          4.20.000
                    eConnect
                                                                                                                   Copyright Microsoft, 1999
          };
                                                                                    All Rights Reserved
          CSocketErr(Action eAction, LPCTSTR szLocation);
                                                                                                                   not audited
          CSocketErr(int iError) { m_errId = iError; };
          int
                              m_errId;
                                                                                    PURPOSE:
                                                                                                         Automated installation application for TPC-C
          Action
                    m eAction;
                                                                           Web Kit
                                                                                    Contact: Charles Levine (clevine@microsoft.com)
          int ErrorType() { return ERR TYPE SOCKET;};
          int ErrorNum() { return m_errId;};
                                                                             Change history:
          char *ErrorText(void);
                                                                                               4.20.000 - added COM installation steps
};
class CSystemErr: public CBaseErr
                                                                          #include <windows.h>
                                                                          #include <direct.h>
public:
                                                                          #include <io.h>
          enum Action
                                                                          #include <stdlib.h>
                                                                          #include <stdio.h>
                    eNone,
                    eTransactNamedPipe,
                                                                          #include <commetrl.h>
                                                                          #include "..\..\common\src\ReadRegistry.h"
                    eWaitNamedPipe,
                    eSetNamedPipeHandleState,
                                                                          #include "resource.h"
                    eCreateFile,
                    eCreateProcess,
                                                                                                                   WM_USER+100
                                                                                    WM_INITTEXT
                    eCallNamedPipe,
                                                                          #define
                    eCreateEvent,
                    eCreateThread,
                                                                          HICON
                                                                                              hIcon;
                                                                          HINSTANCE
                                                                                              hInst:
                    eVirtualAlloc,
                    eReadFile,
                                                                                                         versionExeMS;
                    eWriteFile,
                                                                          DWORD
                                                                          DWORD
                                                                                                         versionExeLS;
                    eMapViewOfFile,
                                                                          DWORD
                    eCreateFileMapping,
                                                                                                         versionExeMM;
                                                                          DWORD
                                                                                                         versionDllMS;
                    eInitializeSecurityDescriptor,
                    eSetSecurityDescriptorDacl,
                                                                          DWORD
                                                                                                         versionDllLS;
                    eCreateNamedPipe,
                    eConnectNamedPipe,
                                                                          // TPC-C registry settings
                                                                          TPCCREGISTRYDATA
                    eWaitForSingleObject,
                                                                                                         Reg;
                    eRegOpenKeyEx,
                                                                                                         iPoolThreadLimit;
                    eRegQueryValueEx,
                                                                          static
                                                                                    int
                                                                          static
                                                                                    int
                                                                                                         iThreadTimeout;
          };
                                                                          static
                                                                                    int
                                                                                                         iListenBackLog;
                                                                                                         iAcceptExOutstanding;
                                                                          static
                                                                                    int
          CSystemErr(Action eAction, LPCTSTR szLocation);
                                                                                                         iMaxPhysicalMemory;
          void Draw(HWND hwnd, LPCTSTR szStr = NULL);
                                                                          static
                                                                                    int
                                                                          //max physical memory in MB
                                                                          static
                                                                                    char
                                                                                              szLastFileName[64];
                                                                                                                             // last file we worked
          int
                              m errId;
                                                                          on (for error reporting)
          Action
                    m_eAction;
          int ErrorType() { return ERR_TYPE_OS;}
                                                                          BOOL
                                                                                    CALLBACK
                                                                                                         LicenseDlgProc(HWND hwnd, UINT uMsg,
          int ErrorNum() { return m_errId;}
                                                                          WPARAM wParam, LPARAM lParam);
          char *ErrorText() { return m_szMsg; }
                                                                                                         UpdatedDlgProc(HWND hwnd, UINT uMsg,
                                                                          BOOL
                                                                                    CALLBACK
};
                                                                          WPARAM wParam, LPARAM lParam);
                                                                          BOOL
                                                                                    CALLBACK
                                                                                                         MainDlgProc(HWND hwnd, UINT uMsg,
class CMemoryErr: public CBaseErr
                                                                          WPARAM wParam, LPARAM lParam);
```

```
BOOL
                            CopyDlgProc(HWND hwnd, UINT uMsg,
         CALLBACK
                                                                                                  SendMessage( GetDlgItem(hwnd,
                                                                     IDR LICENSE1), WM SETFONT, (WPARAM)hFont, MAKELPARAM(0, 0)
WPARAM wParam, LPARAM lParam);
                            ProcessOK(HWND hwnd, char *szDllPath);
static
         void
                            ReadRegistrySettings(void);
                                                                                                  PostMessage(hwnd, WM_INITTEXT,
static
         void
                            WriteRegistrySettings(char *szDllPath);
                                                                     (WPARAM)0, (LPARAM)0);
static
         void
         BOOL
                            RegisterDLL(char *szFileName);
                                                                                                  return TRUE;
static
                                      CopyFiles(HWND hDlg, char
static
         int
                                                                                        case WM INITTEXT:
                                                                                                  hResInfo = FindResource(hInst,
*szDllPath);
                                                                     MAKEINTRESOURCE(IDR LICENSE1), "LICENSE");
static
         BOOL
                            GetInstallPath(char *szDllPath);
                            GetVersionInfo(char *szDLLPath, char
                                                                                                  dwSize = SizeofResource(hInst, hResInfo);
         void
static
                                                                                                  hRes = LoadResource(hInst, hResInfo );
*szExePath);
         BOOL
                            CheckWWWebService(void);
                                                                                                  pSrc = (BYTE *)LockResource(hRes);
static
static
         BOOL
                            StartWWWebService(void);
                                                                                                  pDst = (unsigned char *)malloc(dwSize+1);
                            StopWWWebService(void);
         BOOL
                                                                                                  if (pDst)
static
                            UpdateDialog(HWND hDlg);
static
         void
                                                                                                           memcpy(pDst, pSrc, dwSize);
BOOL install com(char *szDllPath);
                                                                                                           pDst[dwSize] = 0;
                                                                                                           SetDlgItemText(hwnd,
#include "..\..\common\src\ReadRegistry.cpp"
                                                                     IDC_LICENSE, (const char *)pDst);
                                                                                                            free(pDst);
int WINAPI WinMain( HINSTANCE hInstance, HINSTANCE hPrevInstance,
LPSTR lpCmdLine, int nCmdShow)
                                                                                                  else
                                                                                                           SetDlgItemText(hwnd,
         int iRc;
                                                                     IDC LICENSE, (const char *)pSrc);
                                                                                                  return TRUE;
         hInst = hInstance;
                                                                                        case WM DESTROY:
                                                                                                  DeleteObject(hFont);
         InitCommonControls();
                                                                                                  return TRUE;
                                                                                        case WM COMMAND:
                                                                                                  if(wParam == IDOK)
         hIcon = LoadIcon(hInstance,
MAKEINTRESOURCE(IDI ICON1));
                                                                                                           EndDialog(hwnd, TRUE);
                                                                                                  if ( wParam == IDCANCEL )
         iRc = DialogBox(hInstance.
                                                                                                           EndDialog(hwnd, FALSE);
MAKEINTRESOURCE(IDD_DIALOG4), GetDesktopWindow(),
                                                                                        default:
LicenseDlgProc);
                                                                                                  break:
         if (iRc)
                                                                               return FALSE;
                   iRc = DialogBox(hInstance,
MAKEINTRESOURCE(IDD_DIALOG1), GetDesktopWindow(),
MainDlgProc);
                                                                     BOOL CALLBACK UpdatedDlgProc(HWND hwnd, UINT uMsg, WPARAM
                   if (iRc)
                                                                     wParam, LPARAM lParam)
                            DialogBoxParam(hInstance,
                                                                               switch(uMsg)
MAKEINTRESOURCE(IDD DIALOG2), GetDesktopWindow(),
UpdatedDlgProc, (LPARAM)iRc);
                                                                                        case WM INITDIALOG:
                                                                                                  switch(lParam)
                                                                                                           case 1:
         DestroyIcon(hIcon);
                                                                                                           case 2:
                                                                                                                     SetDlgItemText(hwnd,
                                                                     IDC_RESULTS, "TPC-C Web Client Installed");
                                                                                                                     break;
BOOL CALLBACK LicenseDlgProc(HWND hwnd, UINT uMsg, WPARAM
wParam, LPARAM lParam)
                                                                                                  return TRUE;
                                                                                        case WM COMMAND:
         HGLOBAL
                                               hRes;
                                                                                                  if ( wParam == IDOK )
         HRSRC
                                      hResInfo;
                                                                                                            EndDialog(hwnd, TRUE);
         BYTE
                                      *pSrc, *pDst;
                                                                                                  break:
         DWORD
                                      dwSize;
                                                                                        default:
         static HFONT
                            hFont:
                                                                                                  break;
         switch(uMsg)
                                                                               return FALSE;
                   case WM INITDIALOG:
                                                                     BOOL CALLBACK MainDlgProc(HWND hwnd, UINT uMsg, WPARAM
                            0, 0, 0, 0, 0, "Arial");
                                                                     wParam, LPARAM lParam)
                                                                               PAINTSTRUCT
                                                                                                           ns:
```

```
SetDlgItemInt(hwnd,
         MEMORYSTATUS memoryStatus;
                                                                       ED MAXCONNECTION, Reg.dwMaxConnections, FALSE);
         OSVERSIONINFO VI;
                                      szTmp[256];
                                                                                                    SetDlgItemInt(hwnd,
         char
                             szDllPath[256];
                                                                       ED_MAXDELIVERIES, Reg.dwMaxPendingDeliveries, FALSE);
         static char
                             szExePath[256];
                                                                                                    SetDlgItemInt(hwnd,
         static char
                                                                       ED IIS MAX THEAD POOL LIMIT, iPoolThreadLimit, FALSE);
                                                                                                    SetDlgItemInt(hwnd,
         switch(uMsg)
                                                                       ED_IIS_THREAD_TIMEOUT, iThreadTimeout, FALSE);
                   case WM INITDIALOG:
                                                                                                    SetDlgItemInt(hwnd,
                                                                       ED IIS LISTEN BACKLOG, iListenBackLog, FALSE);
                             GlobalMemoryStatus(&memoryStatus);
                                                                                                    SetDlgItemInt(hwnd,
                             iMaxPhysicalMemory=
(memoryStatus.dwTotalPhys/1048576);
                                                                       ED WEB_SERVICE_BACKLOG_QUEUE_SIZE, iAcceptExOutstanding,
                                                                       FALSE);
                             if ( GetInstallPath(szDllPath) )
                                                                                                    CheckDlgButton(hwnd, IDC DBLIB, 0);
                                                                                                    CheckDlgButton(hwnd, IDC_ODBC, 0);
                                      MessageBox(hwnd, "Error internet
                                                                                                    if (Reg.eDB Protocol == DBLIB)
service inetsry is not installed.", NULL, MB ICONSTOP | MB OK);
                                                                                                             CheckDlgButton(hwnd,
                                      EndDialog(hwnd, FALSE);
                                      return TRUE:
                                                                       IDC_DBLIB, 1);
                                                                                                    else
                                                                                                             CheckDlgButton(hwnd,
                             // set default values
                                                                       IDC ODBC, 1);
                             ZeroMemory( &Reg, sizeof(Reg) );
                             Reg.dwNumberOfDeliveryThreads = 4;
                                                                                                    // check OS version level for COM. Must be
                             Reg.dwMaxConnections = 100;
                                                                       at least Windows 2000
                             Reg.dwMaxPendingDeliveries
                                                         = 100:
                                                                                                    VI.dwOSVersionInfoSize = sizeof(VI);
                             Reg.eDB Protocol = DBLIB;
                                                                                                    GetVersionEx( &VI );
                             Reg.eTxnMon = None;
                                                                                                    if (VI.dwMajorVersion < 5)
                             strcpy(Reg.szDbServer,
                                                                                                    {
"");
                                                                                                             HWND hDlg = GetDlgItem(
                             strcpy(Reg.szDbName,
                                                                       hwnd, IDC TM MTS );
"tpcc");
                                                                                                             EnableWindow( hDlg, 0 );
                                                                                                                                          //
                             strcpy(Reg.szDbUser,
                                                          "sa");
                                                                       disable COM option
                             strcpy(Reg.szDbPassword,
                                                          "");
                                                                                                             if(Reg.eTxnMon == COM)
                                                                                                                       Reg.eTxnMon = None;
                             iPoolThreadLimit = iMaxPhysicalMemory *
2;
                             iThreadTimeout = 86400;
                                                                                                    CheckDlgButton(hwnd, IDC TM NONE,
                             iListenBackLog = 15;
                                                                       0);
                             iAcceptExOutstanding = 40;
                                                                                                    CheckDlgButton(hwnd, IDC_TM_TUXEDO,
                                                                       0);
                             ReadTPCCRegistrySettings( &Reg );
                                                                                                    CheckDlgButton(hwnd, IDC TM MTS, 0);
                             ReadRegistrySettings();
                                                                                                    CheckDlgButton(hwnd, IDC TM ENCINA,
                                                                       0);
                             GetModuleFileName(hInst, szExePath,
                                                                                                    switch (Reg.eTxnMon)
sizeof(szExePath));
                             GetVersionInfo(szDllPath, szExePath);
                                                                                                    case None:
                                                                                                             CheckDlgButton(hwnd,
                             wsprintf(szTmp, "Version %d.%2.2d.%3.3d",
                                                                       IDC_TM_NONE, 1);
versionExeMS, versionExeMM,
                            versionExeLS);
                                                                                                             break;
                             SetDlgItemText(hwnd, IDC_VERSION,
                                                                                                    case TUXEDO:
                                                                                                             CheckDlgButton(hwnd,
szTmp);
                                                                       IDC_TM_TUXEDO, 1);
                             SetDlgItemText(hwnd, IDC PATH,
                                                                                                             break;
szDllPath);
                                                                                                    case ENCINA:
                                                                                                              CheckDlgButton(hwnd,
                             SetDlgItemText(hwnd, ED DB SERVER,
                                                                       IDC TM ENCINA, 1);
Reg.szDbServer);
                                                                                                             break:
                             SetDlgItemText(hwnd, ED DB USER ID,
                                                                                                    case COM:
Reg.szDbUser);
                                                                                                              CheckDlgButton(hwnd,
                             SetDlgItemText(hwnd,
                                                                       IDC_TM_MTS,
                                                                                          1);
ED DB PASSWORD, Reg.szDbPassword);
                                                                                                             break;
                             SetDlgItemText(hwnd, ED_DB_NAME,
Reg.szDbName);
                                                                                                   return TRUE;
                             SetDlgItemInt(hwnd, ED THREADS,
                                                                                          case WM PAINT:
Reg.dwNumberOfDeliveryThreads, FALSE);
                                                                                                    if (IsIconic(hwnd))
```

```
BeginPaint(hwnd, &ps);
                                                                                            rc = 1;
                                       DrawIcon(ps.hdc, 0, 0, hIcon);
                                       EndPaint(hwnd, &ps);
                                                                                  else if ( IsDlgButtonChecked(hwnd, IDC ODBC) )
                                       return TRUE;
                                                                                            Reg.eDB_Protocol = ODBC;
                             break;
                                                                                            rc = 2;
                   case WM COMMAND:
                             if ( HIWORD(wParam) == BN CLICKED )
                                                                                  if (IsDlgButtonChecked(hwnd, IDC_TM_NONE))
                                       switch( LOWORD(wParam) )
                                                                                            Reg.eTxnMon = None;
                                                                                  else if ( IsDlgButtonChecked(hwnd, IDC_TM_TUXEDO) )
                                                 case IDC DBLIB:
                                                                                            Reg.eTxnMon = TUXEDO;
                                                           return
                                                                                  else if (IsDlgButtonChecked(hwnd, IDC TM MTS))
TRUE;
                                                                                            Reg.eTxnMon = COM;
                                                                                  else if ( IsDlgButtonChecked(hwnd, IDC_TM ENCINA) )
                                                 case IDC ODBC:
                                                           return
                                                                                            Reg.eTxnMon = ENCINA;
TRUE;
                                                                                  iPoolThreadLimit = GetDlgItemInt(hwnd,
                                                 case IDOK:
                                                                        ED_IIS_MAX_THEAD_POOL_LIMIT, &d, FALSE);
ProcessOK(hwnd, szDllPath);
                                                                                  iThreadTimeout = GetDlgItemInt(hwnd,
                                                                        ED_IIS_THREAD_TIMEOUT, &d, FALSE);
                                                           return
                                                                        iListenBackLog = GetDlgItemInt(hwnd, ED_IIS_LISTEN_BACKLOG, &d, FALSE);
TRUE;
                                                 case IDCANCEL:
                                                                                  iAcceptExOutstanding = GetDlgItemInt(hwnd,
EndDialog(hwnd, FALSE);
                                                                        ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE, &d, FALSE);
                                                           return
TRUE;
                                                                                  ShowWindow(hwnd, SW_HIDE);
                                                 default:
                                                           return
                                                                                  hDlg = CreateDialog(hInst,
                                                                        MAKEINTRESOURCE(IDD_DIALOG3), hwnd, CopyDlgProc);
FALSE;
                                                                                  ShowWindow(hDlg, SW_SHOWNA);
                                                                                  UpdateDialog(hDlg);
                             break:
                    default:
                                                                                  // write binaries to inetpub\wwwroot
                             break:
                                                                                  rc = CopyFiles(hDlg, szDllPath);
          return FALSE;
                                                                                  if (!rc)
}
                                                                                            ShowWindow(hwnd, SW_SHOWNA);
static void ProcessOK(HWND hwnd, char *szDllPath)
                                                                                            DestroyWindow(hDlg);
                                                                                            strcpy( szErrTxt, "Error(s) occured when creating " );
                                                                                            strcat( szErrTxt, szLastFileName );
          int
                             d;
          HWND
                   hDlg;
                                                                                            MessageBox(hwnd, szErrTxt, NULL, MB ICONSTOP |
                                                                        MB_OK);
          int
                             rc:
                                                                                            EndDialog(hwnd, 0);
                    szFullName[256];
          char
                                                                                            return;
                   szErrTxt[128];
          char
          // read settings from dialog
                                                                                  // update registry
          Reg.dwNumberOfDeliveryThreads = GetDlgItemInt(hwnd,
                                                                                  SetDlgItemText(hDlg, IDC STATUS, "Updating Registry.");
ED_THREADS, &d, FALSE);
                                                                                  SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0,
          Reg.dwMaxConnections = GetDlgItemInt(hwnd,
                                                                        0);
ED_MAXCONNECTION, &d, FALSE);
                                                                                  UpdateDialog(hDlg);
          Reg.dwMaxPendingDeliveries = GetDlgItemInt(hwnd,
                                                                                  WriteRegistrySettings(szDllPath);
ED MAXDELIVERIES, &d, FALSE);
                                                                                  // register com proxy stub
          GetDlgItemText(hwnd, ED_DB_SERVER, Reg.szDbServer,
                                                                                  strcpy(szFullName, szDllPath);
sizeof(Reg.szDbServer));
                                                                                  strcat(szFullName, "tpcc_com_ps.dll");
          GetDlgItemText(hwnd, ED_DB_USER_ID, Reg.szDbUser,
                                                                                  if (!RegisterDLL(szFullName))
sizeof(Reg.szDbUser));
          GetDlgItemText(hwnd, ED_DB_PASSWORD, Reg.szDbPassword,
                                                                                            ShowWindow(hwnd, SW SHOWNA);
sizeof(Reg.szDbPassword));
                                                                                            DestroyWindow(hDlg);
                                                                                            strcpy( szErrTxt, "Error occured when registering " );
          GetDlgItemText(hwnd, ED_DB_NAME, Reg.szDbName,
sizeof(Reg.szDbName));
                                                                                            strcat( szErrTxt, szFullName );
                                                                                            MessageBox(hwnd, szErrTxt, NULL, MB_ICONSTOP |
          if ( IsDlgButtonChecked(hwnd, IDC DBLIB) )
                                                                        MB OK);
                                                                                            EndDialog(hwnd, 0);
                    Reg.eDB Protocol = DBLIB;
                                                                                            return;
```

```
}
                                                                                 {
                                                                                          size = sizeof(iAcceptExOutstanding);
         // if using COM
                                                                                          if (RegQueryValueEx(hKey, "AcceptExOutstanding", 0,
                                                                       &type, (char *)&iAcceptExOutstanding, &size) == ERROR_SUCCESS)
         if (Reg.eTxnMon == COM)
                                                                                                    if (!iAcceptExOutstanding)
                   SetDlgItemText(hDlg, IDC STATUS, "Configuring
                                                                                                              iAcceptExOutstanding = 40;
COM.");
                   SendDlgItemMessage(hDlg, IDC PROGRESS1,
                                                                                          RegCloseKey(hKey);
PBM STEPIT, 0, 0);
                   UpdateDialog(hDlg);
                   if (install_com(szDllPath))
                                                                       static void WriteRegistrySettings(char *szDllPath)
                             ShowWindow(hwnd, SW_SHOWNA);
                                                                                 HKEY
                                                                                          hKey;
                             DestroyWindow(hDlg);
                                                                                 DWORD
                                                                                          dwDisposition;
                             strcpy( szErrTxt, "Error occured when
                                                                                 char
                                                                                          szTmp[256];
configuring COM settings.");
                                                                                 char
                                                                                           *ptr;
                             MessageBox(hwnd, szErrTxt, NULL,
                                                                                                    iRc;
MB ICONSTOP | MB OK);
                                                                                 if (RegCreateKeyEx(HKEY LOCAL MACHINE,
                             EndDialog(hwnd, 0);
                                                                        "SOFTWARE\\Microsoft\\TPCC", 0, NULL,
                             return;
                                                                       REG OPTION NON VOLATILE, KEY ALL ACCESS, NULL, &hKey,
                                                                       &dwDisposition) == ERROR SUCCESS)
         Sleep(100);
                                                                                          strcpy(szTmp, szDllPath);
                                                                                          ptr = strstr(szTmp, "tpcc");
         ShowWindow(hwnd, SW SHOWNA);
                                                                                          if (ptr)
         DestroyWindow(hDlg);
                                                                                                    *ptr = 0;
         EndDialog(hwnd, rc);
                                                                                          RegSetValueEx(hKey, "Path", 0, REG_SZ, szTmp,
         return;
                                                                       strlen(szTmp)+1);
                                                                                          RegSetValueEx(hKey, "NumberOfDeliveryThreads", 0,
                                                                       REG DWORD, (char *)&Reg.dwNumberOfDeliveryThreads,
static void ReadRegistrySettings(void)
                                                                       sizeof(Reg.dwNumberOfDeliveryThreads));
                                                                                          RegSetValueEx(hKey, "MaxConnections", 0,
         HKEY
                   hKey;
         DWORD size;
                                                                       REG_DWORD, (char *)&Reg.dwMaxConnections,
         DWORD type;
                                                                       sizeof(Reg.dwMaxConnections));
                                                                                          RegSetValueEx(hKey, "MaxPendingDeliveries", 0,
                                                                       REG DWORD, (char *)&Reg.dwMaxPendingDeliveries,
         if ( RegOpenKeyEx(HKEY_LOCAL_MACHINE,
"SYSTEM\\CurrentControlSet\\Services\\Inetinfo\\Parameters", 0,
                                                                       sizeof(Reg.dwMaxPendingDeliveries));
KEY_READ, &hKey) == ERROR_SUCCESS )
                                                                                          RegSetValueEx(hKey, "DB Protocol", 0, REG SZ,
                   size = sizeof(iPoolThreadLimit);
                                                                       szDBNames[Reg.eDB_Protocol], strlen(szDBNames[Reg.eDB_Protocol])+1);
                   if (RegQueryValueEx(hKey, "PoolThreadLimit", 0,
                                                                                           RegSetValueEx(hKey, "TxnMonitor", 0, REG SZ,
&type, (char *)&iPoolThreadLimit, &size) == ERROR_SUCCESS)
                                                                       szTxnMonNames[Reg.eTxnMon], strlen(szTxnMonNames[Reg.eTxnMon])+1);
                             if (!iPoolThreadLimit)
                                      iPoolThreadLimit =
                                                                                          RegSetValueEx(hKey, "DbServer", 0, REG SZ,
iMaxPhysicalMemory * 2;
                                                                       Reg.szDbServer, strlen(Reg.szDbServer)+1);
                                                                                          RegSetValueEx(hKey, "DbName", 0, REG SZ,
                                                                       Reg.szDbName, strlen(Reg.szDbName)+1);
                   size = sizeof(iThreadTimeout);
                   if ( RegQueryValueEx(hKey, "ThreadTimeout", 0,
                                                                                           RegSetValueEx(hKey, "DbUser", 0, REG SZ,
&type, (char *)&iThreadTimeout, &size) == ERROR_SUCCESS)
                                                                       Reg.szDbUser, strlen(Reg.szDbUser)+1);
                             if (!iThreadTimeout)
                                                                                           RegSetValueEx(hKey, "DbPassword", 0, REG SZ,
                                      iThreadTimeout = 86400;
                                                                       Reg.szDbPassword, strlen(Reg.szDbPassword)+1);
                   size = sizeof(iListenBackLog);
                                                                                          strcpy(szTmp, "YES");
                   if \ (\ RegQueryValueEx(hKey, "ListenBackLog", 0,
                                                                                          RegSetValueEx(hKey, "COM_SinglePool", 0, REG SZ,
&type, (char *)&iListenBackLog, &size) == ERROR SUCCESS)
                                                                       szTmp, strlen(szTmp)+1);
                             if (!iListenBackLog)
                                      iListenBackLog = 15;
                                                                                          RegFlushKev(hKev);
                                                                                          RegCloseKey(hKey);
                   RegCloseKey(hKey);
                                                                                 if ( (iRc=RegCreateKeyEx(HKEY_LOCAL_MACHINE,
         if (RegOpenKeyEx(HKEY LOCAL MACHINE,
                                                                       "SYSTEM\\CurrentControlSet\\Services\\Inetinfo\\Parameters", 0, NULL,
                                                                       REG_OPTION_NON_VOLATILE, KEY_ALL_ACCESS, NULL, &hKey,
"SYSTEM\\CurrentControlSet\\Services\\W3SVC\\Parameters", 0,
KEY_READ, &hKey) == ERROR_SUCCESS)
                                                                       &dwDisposition)) == ERROR_SUCCESS)
```

```
DWORD
                   RegSetValueEx(hKey, "PoolThreadLimit", 0,
                                                                                   char
                                                                                                                 szFullName[256];
REG DWORD, (char *)&iPoolThreadLimit, sizeof(iPoolThreadLimit));
                    RegSetValueEx(hKey, "ThreadTimeout", 0,
                                                                                  hResInfo = FindResource(hInst,
REG DWORD, (char *)&iThreadTimeout, sizeof(iThreadTimeout));
                                                                         MAKEINTRESOURCE(iResourceId), szResourceName);
                    RegSetValueEx(hKey, "ListenBackLog", 0,
REG DWORD, (char *)&iListenBackLog, sizeof(iListenBackLog));
                                                                                   strcpy(szFullName, szDllPath);
                                                                                   strcat(szFullName, szFileName);
                    RegFlushKey(hKey);
                    RegCloseKey(hKey);
                                                                                   dwSize = SizeofResource(hInst, hResInfo);
                                                                                  hDLL = LoadResource(hInst, hResInfo);
                                                                                   pSrc = (BYTE *)LockResource(hDLL);
         if ((iRc=RegCreateKeyEx(HKEY LOCAL MACHINE,
                                                                                   remove(szFullName);
"SYSTEM\\CurrentControlSet\\Services\\W3SVC\\Parameters", 0, NULL,
REG OPTION NON VOLATILE, KEY ALL ACCESS, NULL, &hKey,
                                                                                  if (!(hFile = CreateFile(szFullName, GENERIC WRITE, 0, NULL,
                                                                         CREATE ALWAYS, FILE ATTRIBUTE NORMAL, NULL)))
&dwDisposition)) == ERROR SUCCESS)
                                                                                            return FALSE;
                    RegSetValueEx(hKey, "AcceptExOutstanding", 0,
REG DWORD, (char *)&iAcceptExOutstanding,
                                                                                   if (!WriteFile(hFile, pSrc, dwSize, &d, NULL))
sizeof(iAcceptExOutstanding));
                                                                                            return FALSE;
                    RegFlushKey(hKey);
                                                                                   CloseHandle(hFile);
                    RegCloseKey(hKey);
                                                                                  UnlockResource(hDLL);
                                                                                   FreeResource(hDLL);
                                                                                   return TRUE;
         return;
BOOL CALLBACK CopyDlgProc(HWND hwnd, UINT uMsg, WPARAM
                                                                         static int CopyFiles(HWND hDlg, char *szDllPath)
wParam, LPARAM lParam)
                                                                                   BOOL
                                                                                                       bSvcRunning;
          if ( uMsg == WM_INITDIALOG )
                                                                                   bSvcRunning = CheckWWWebService();
                    SendDlgItemMessage(hwnd, IDC PROGRESS1,
                                                                                   if (bSvcRunning)
PBM_SETRANGE, 0, MAKELPARAM(0, 16));
                    SendDlgItemMessage(hwnd, IDC PROGRESS1,
                                                                                             SetDlgItemText(hDlg, IDC STATUS, "Stopping Web
PBM_SETSTEP, (WPARAM)1, 0);
                                                                         Service.");
                   return TRUE;
                                                                                            SendDlgItemMessage(hDlg, IDC PROGRESS1,
                                                                         PBM_STEPIT, 0, 0);
         return FALSE;
                                                                                             UpdateDialog(hDlg);
                                                                                            StopWWWebService();
BOOL RegisterDLL(char *szFileName)
                                                                                             SendDlgItemMessage(hDlg, IDC PROGRESS1,
                                                                         PBM STEPIT, 0, 0):
          HINSTANCE
                                                                                             UpdateDialog(hDlg);
                             hLib;
          FARPROC
                                        lpDllEntryPoint;
                                                                                   SetDlgItemText(hDlg, IDC STATUS, "Copying Files...");
          hLib = LoadLibrary(szFileName);
          if(hLib == NULL)
                                                                                   SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0,
                                                                         0);
                   return FALSE;
          // Find the entry point.
                                                                                   UpdateDialog(hDlg);
         lpDllEntryPoint = GetProcAddress(hLib, "DllRegisterServer");
          if (lpDllEntryPoint != NULL)
                                                                                  // install TPCC.DLL
                                                                                  strcpy( szLastFileName, "tpcc.dll" ); if (!FileFromResource( "TPCCDLL", IDR_TPCCDLL, szDllPath,
          {
                   return ((*lpDllEntryPoint)() == S OK);
                                                                         szLastFileName ))
         else
                                                                                   SendDlgItemMessage(hDlg, IDC PROGRESS1, PBM STEPIT, 0,
                   return FALSE;
                                       //unable to locate entry point
                                                                         0);
                                                                                   UpdateDialog(hDlg);
BOOL FileFromResource( char *szResourceName, int iResourceId, char
*szDllPath, char *szFileName)
                                                                                  // install tpcc dblib.dll
                                                                                  strcpy( szLastFileName, "tpcc_dblib.dll" );
if (!FileFromResource( "DBLIB_DLL", IDR_DBLIB_DLL,
          HGLOBAL
                                                 hDLL;
          HRSRC
                                       hResInfo;
                                                                         szDllPath, szLastFileName ))
          HANDLE
                                       hFile;
                                                                                   SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0,
          DWORD
                                        dwSize;
          BYTE
                                        *pSrc;
                                                                         0);
```

```
UpdateDialog(hDlg);
                                                                                               SetDlgItemText(hDlg, IDC_STATUS, "Starting Web
                                                                           Service.");
          // install tpcc_odbc.dll
                                                                                                SendDlgItemMessage(hDlg, IDC PROGRESS1,
          strcpy( szLastFileName, "tpcc_odbc.dll" );
                                                                           PBM STEPIT, 0, 0);
          if (!FileFromResource( "ODBC_DLL", IDR_ODBC_DLL,
                                                                                               UpdateDialog(hDlg);
szDllPath, szLastFileName ))
                                                                                               StartWWWebService();
                    return 0;
                                                                                     }
          SendDlgItemMessage(hDlg, IDC PROGRESS1, PBM STEPIT, 0,
0);
                                                                                     SendDlgItemMessage(hDlg, IDC PROGRESS1, PBM STEPIT, 0,
                                                                           0);
          UpdateDialog(hDlg);
                                                                                     UpdateDialog(hDlg);
          // install tuxapp.exe
          strcpy( szLastFileName, "tuxapp.exe" );
                                                                                     return 1;
          if (!FileFromResource( "TUXEDO_APP", IDR_TUXEDO_APP,
szDllPath, szLastFileName ))
                                                                           static BOOL GetInstallPath(char *szDllPath)
                    return 0;
          SendDlgItemMessage(hDlg, IDC PROGRESS1, PBM STEPIT, 0,
                                                                             HKEY hKey;
0);
                                                                                               szData[256];
          UpdateDialog(hDlg);
                                                                                     BYTE
                                                                                     DWORD sv;
                                                                                     BOOL
                                                                                               bRc;
          // install tpcc_tuxedo.dll
          strcpy( szLastFileName, "tpcc_tuxedo.dll" );
if (!FileFromResource( "TUXEDO_DLL", IDR_TUXEDO_DLL,
                                                                                     int
                                                                                                          len;
                                                                                     char
                                                                                                *ptr;
szDllPath, szLastFileName ))
                                                                                                          iRc;
                                                                                     int
                    return 0;
          SendDlgItemMessage(hDlg, IDC PROGRESS1, PBM STEPIT, 0,
                                                                                     szDllPath[0] = 0;
0);
                                                                                     bRc = TRUE;
                                                                                     if (RegOpenKeyEx(HKEY_LOCAL_MACHINE,
          UpdateDialog(hDlg);
                                                                           "SYSTEM\\CurrentControlSet\\Services\\W3SVC\\Parameters\\Virtual Roots",
                                                                           0, KEY_ALL_ACCESS, &hKey) == ERROR_SUCCESS)
          // install tpcc com.dll
          strcpy( szLastFileName, "tpcc com.dll" );
          if (!FileFromResource( "COM_DLL", IDR_COM_DLL, szDllPath,
                                                                                                sv = sizeof(szData);
szLastFileName ))
                                                                                               iRc = RegQueryValueEx( hKey, "/,", NULL, NULL,
                                                                           szData, &sv); // used by IIS 3.0
                                                                                               if (iRc == ERROR_FILE_NOT_FOUND)
          SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0,
0);
                                                                                                          iRc = RegQueryValueEx( hKey, "/", NULL,
          UpdateDialog(hDlg);
                                                                           NULL, szData, &sv ); \ \ /\!/\ used by IIS 4.0
                                                                                               if(iRc == ERROR SUCCESS)
          // install tpcc_com_all.tlb
          strcpy( szLastFileName, "tpcc_com_all.tlb" );
                                                                                                          bRc = FALSE;
          if (!FileFromResource( "COM TYPLIB",
                                                                                                          strcpy(szDllPath, szData);
IDR_COMTYPLIB_DLL, szDllPath, szLastFileName ))
                                                                                                          if ( (ptr = strchr(szDllPath, ',')) )
                                                                                                                    *ptr = 0;
                    return 0;
          SendDlgItemMessage(hDlg, IDC PROGRESS1, PBM STEPIT, 0,
                                                                                                          len = strlen(szDllPath);
0);
                                                                                                          if (szDllPath[len-1]!='\\')
          UpdateDialog(hDlg);
                                                                                                          {
          // install tpcc com ps.dll
                                                                                                                    szDllPath[len] = '\\';
          strcpy( szLastFileName, "tpcc_com_ps.dll" );
                                                                                                                    szDllPath[len+1] = 0;
          if (!FileFromResource( "COM PS DLL", IDR COMPS DLL,
szDllPath, szLastFileName ))
                    return 0;
          SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0,
                                                                                               RegCloseKey(hKey);
0);
          UpdateDialog(hDlg);
                                                                                     return bRc;
          // install tpcc com all.dll
          strcpy( szLastFileName, "tpcc_com_all.dll" );
          if (!FileFromResource( "COM ALL DLL", IDR COMALL DLL,
                                                                           static void GetVersionInfo(char *szDLLPath, char *szExePath)
szDllPath, szLastFileName ))
                    return 0;
                                                                                     DWORD
          SendDlgItemMessage(hDlg, IDC PROGRESS1, PBM STEPIT, 0,
                                                                                     DWORD
                                                                                                                               dwSize;
0);
                                                                                     DWORD
                                                                                                                               dwBytes;
          UpdateDialog(hDlg);
                                                                                                                               *ptr;
                                                                                     VS FIXEDFILEINFO
                                                                                                                    *vs;
          //if we stopped service restart it.
                                                                                     versionDllMS = 0;
          if (bSvcRunning)
                                                                                     versionDllLS = 0;
          {
```

```
if ( access(szDLLPath, 00) == 0 )
                                                                                   SERVICE STATUS ssStatus;
                                                                                   DWORD
                                                                                                                 dwOldCheckPoint;
                    dwSize = GetFileVersionInfoSize(szDLLPath, &d);
                                                                                   schSCManager = OpenSCManager(NULL, NULL,
                    if (dwSize)
                                                                         SC_MANAGER_ALL_ACCESS);
                                                                                   schService = OpenService(schSCManager, TEXT("W3SVC"),
                              ptr = (char *)malloc(dwSize);
                              GetFileVersionInfo(szDLLPath, 0, dwSize,
                                                                         SERVICE_ALL_ACCESS);
                                                                                   if (schService == NULL)
ptr);
                              VerQueryValue(ptr, "\\",&vs, &dwBytes);
                                                                                             return FALSE;
                              versionDllMS = vs->dwProductVersionMS;
                              versionDllLS = vs->dwProductVersionLS;
                                                                                   if (! StartService(schService, 0, NULL))
                                                                                             goto StartWWWebErr;
                              free(ptr);
                    }
                                                                                   //start Service pending, Check the status until the service is running.
                                                                                   if (! QueryServiceStatus(schService, &ssStatus))
                                                                                             goto StartWWWebErr;
          versionExeMS = 0x7FFF;
                                                                                   while( ssStatus.dwCurrentState != SERVICE RUNNING)
          versionExeLS = 0x7FFF;
          dwSize = GetFileVersionInfoSize(szExePath, &d);
          if (dwSize)
                                                                                             dwOldCheckPoint = ssStatus.dwCheckPoint;
                                                                                   //Save the current checkpoint.
                                                                                             Sleep(ssStatus.dwWaitHint);
                    ptr = (char *)malloc(dwSize);
                    GetFileVersionInfo(szExePath, 0, dwSize, ptr);
                                                                                                       //Wait for the specified interval.
                    VerQueryValue(ptr, "\\",&vs, &dwBytes);
                                                                                             if ( !QueryServiceStatus(schService, &ssStatus) )
                                                                         //Check the status again.
                    versionExeMS = vs->dwProductVersionMS;
                                                                                                       break;
                    versionExeLS = LOWORD(vs->dwProductVersionLS);
                                                                                             if (dwOldCheckPoint >= ssStatus.dwCheckPoint)
                    versionExeMM = HIWORD(vs->dwProductVersionLS);
                                                                         //Break if the checkpoint has not been incremented.
                                                                                                       break;
                    free(ptr);
          return:
                                                                                   if (ssStatus.dwCurrentState == SERVICE RUNNING)
                                                                                             goto StartWWWebErr;
static BOOL CheckWWWebService(void)
                                                                                   CloseServiceHandle(schService);
          SC_HANDLE
                                        schSCManager;
                                                                                   return TRUE;
          SC HANDLE
                                        schService;
          SERVICE_STATUS ssStatus;
                                                                         StartWWWebErr:
                                                                                   CloseServiceHandle(schService);
          schSCManager = OpenSCManager(NULL, NULL,
                                                                                   return FALSE;
SC_MANAGER_ALL_ACCESS);
          schService = OpenService(schSCManager, TEXT("W3SVC"),
SERVICE_ALL_ACCESS);
                                                                         static BOOL StopWWWebService(void)
          if (schService == NULL)
                   return FALSE;
                                                                                   SC HANDLE
                                                                                                                 schSCManager;
                                                                                   SC HANDLE
                                                                                                                 schService;
                                                                                   SERVICE_STATUS ssStatus;
          if (! QueryServiceStatus(schService, &ssStatus))
                    goto ServiceNotRunning;
                                                                                   DWORD
                                                                                                                 dwOldCheckPoint;
          if (!ControlService(schService, SERVICE_CONTROL_STOP,
                                                                                   schSCManager = OpenSCManager(NULL, NULL,
&ssStatus))
                                                                         SC MANAGER ALL ACCESS);
                                                                                   schService = OpenService(schSCManager, TEXT("W3SVC"),
                    goto ServiceNotRunning;
          //start Service pending, Check the status until the service is running.
                                                                         SERVICE ALL ACCESS);
                                                                                   if (schService == NULL)
          if (! QueryServiceStatus(schService, &ssStatus))
                    goto ServiceNotRunning;
                                                                                             return FALSE;
          CloseServiceHandle(schService);
                                                                                   if (! QueryServiceStatus(schService, &ssStatus))
          return TRUE;
                                                                                             goto StopWWWebErr;
                                                                                   if (!ControlService(schService, SERVICE CONTROL STOP,
ServiceNotRunning:
                                                                         &ssStatus))
          CloseServiceHandle(schService);
                                                                                             goto StopWWWebErr;
          return FALSE;
                                                                                   //start Service pending, Check the status until the service is running.
                                                                                   if (! QueryServiceStatus(schService, &ssStatus) )
}
                                                                                             goto StopWWWebErr;
                                                                                   while( ssStatus.dwCurrentState == SERVICE RUNNING)
static BOOL StartWWWebService(void)
          SC_HANDLE
                                        schSCManager;
          SC_HANDLE
                                        schService;
```

```
#define IDC DBLIB
                 dwOldCheckPoint = ssStatus.dwCheckPoint;
                                                                                                    1021
         //Save the current checkpoint.
                                                                #define IDC_ODBC
                                                                                                    1022
                                                                #define IDC CONNECT POOL
                 Sleep(ssStatus.dwWaitHint);
                          //Wait for the specified interval.
                 if ( !QueryServiceStatus(schService, &ssStatus) )
                                                                #define ED_USER_CONNECT_DELAY_TIME
//Check the status again.
                          break;
                 if (dwOldCheckPoint >= ssStatus.dwCheckPoint)
                                                                // Next default values for new objects
//Break if the checkpoint has not been incremented.
                          break;
         }
                                                                install.rc
        if (ssStatus.dwCurrentState == SERVICE_RUNNING)
                 goto StopWWWebErr;
                                                                //Microsoft Developer Studio generated resource script.
         CloseServiceHandle(schService);
        return TRUE;
                                                                #include "resource.h"
StopWWWebErr:
                                                                #define APSTUDIO_READONLY_SYMBOLS
         CloseServiceHandle(schService);
                                                                return FALSE:
                                                                // Generated from the TEXTINCLUDE 2 resource.
static void UpdateDialog(HWND hDlg)
                                                                #include "afxres.h"
         MSG msg;
                                                                #undef APSTUDIO READONLY SYMBOLS
         UpdateWindow(hDlg);
         while(PeekMessage(&msg, hDlg, 0, 0, PM REMOVE))
                                                                // English (U.S.) resources
                 TranslateMessage(&msg);
                 DispatchMessage(&msg);
                                                                #if !defined(AFX RESOURCE DLL) || defined(AFX TARG ENU)
                                                                #ifdef WIN32
         Sleep(250);
                                                                LANGUAGE LANG ENGLISH, SUBLANG ENGLISH US
        return;
                                                                #pragma code_page(1252)
                                                                #endif // WIN32
                                                                install.h
                                                                // Dialog
//{{NO DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by install.rc
                                                                IDD DIALOG1 DIALOGEX 0, 0, 219, 351
                                                                STYLE DS_MODALFRAME | DS_CENTER | WS_MINIMIZEBOX |
//
                                                                WS POPUP | WS CAPTION |
#define IDD DIALOG1
                                                                  WS_SYSMENU
                                   101
                                                                CAPTION "TPC-C Web Client Installation Utility"
#define IDI TCON1
                                   102
#define IDR TPCCDLL
                                   103
                                                                FONT 8, "MS Sans Serif"
#define IDD DIALOG2
                                   105
                                                                BEGIN
#define IDI_ICON2
#define IDR_DELIVERY
                                                                  EDITTEXT
                                                                               ED_THREADS,164,45,34,12,ES_RIGHT | ES_NUMBER,
                                   106
                                   107
                                                                          WS EX RTLREADING
                                                                               ED_MAXDELIVERIES,164,59,34,12,ES_RIGHT |
#define IDD DIALOG3
                                                                  EDITTEXT
                                   108
                                                                ES_NUMBER,
#define BN_LOG
                                                                          WS_EX_RTLREADING
                                   1001
#define ED KEEP
                                   1002
                                                                  EDITTEXT
                                                                               ED MAXCONNECTION, 164, 73, 34, 12, ES RIGHT |
#define ED_THREADS
                                                                ES_NUMBER,
                                   1003
#define ED THREADS2
                                   1004
                                                                          WS_EX_RTLREADING
#define IDC_PATH
                                   1007
                                                                  CONTROL
#define IDC_VERSION #define IDC_RESULTS
                                                                "None",IDC_TM_NONE,"Button",BS_AUTORADIOBUTTON |
                                   1009
                                   1010
                                                                          WS_GROUP | WS_TABSTOP,43,100,33,10
#define IDC PROGRESS1
                                   1011
                                                                  CONTROL
#define IDC STATUS
                                                                 "COM",IDC TM MTS,"Button",BS AUTORADIOBUTTON |
                                   1012
#define IDC BUTTON1
                                                                          WS TABSTOP,43,113,32,10
                                   1013
#define ED MAXCONNECTION
                                   1014
                                                                  CONTROL
#define ED_IIS_MAX_THEAD_POOL_LIMIT
                                            1015
                                                                 "TUXEDO",IDC_TM_TUXEDO,"Button",BS_AUTORADIOBUTTON |
#define ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE
                                                    1017
                                                                          WS TABSTOP,106,100,46,10
#define ED_IIS_THREAD_TIMEOUT
                                                                  CONTROL
#define ED_IIS_LISTEN_BACKLOG
                                                                "ENCINA",IDC_TM_ENCINA,"Button",BS_AUTORADIOBUTTON |
```

```
WS DISABLED | WS TABSTOP, 106, 113, 43, 10
                                                                STYLE DS SYSMODAL | DS MODALFRAME | DS 3DLOOK |
                                                                DS CENTER | WS CAPTION
 EDITTEXT
               ED DB SERVER,131,152,67,12,ES AUTOHSCROLL
               ED_DB_USER_ID,131,165,67,12,ES_AUTOHSCROLL
 EDITTEXT
                                                                CAPTION "Installing TPC-C Web Client"
               ED_DB_PASSWORD,131,178,67,12,ES_AUTOHSCROLL
                                                                FONT 12, "Arial Black"
 EDITTEXT
 EDITTEXT
               ED_DB_NAME,131,191,67,12,ES_AUTOHSCROLL
                                                                BEGIN
 CONTROL
                                                                  CONTROL
"DBLIB",IDC DBLIB, "Button", BS AUTORADIOBUTTON | WS GROUP |
                                                                "Progress1", IDC PROGRESS1, "msctls progress32", WS BORDER,
         WS TABSTOP,45,219,39,12
                                                                          7,20,77,13
  CONTROL
                                                                  CTEXT
                                                                              "Static", IDC STATUS, 7, 7, 77, 12, SS SUNKEN
"ODBC",IDC ODBC, "Button", BS AUTORADIOBUTTON | WS TABSTOP,
                                                                END
         91,219,39,12
 EDITTEXT
                                                                IDD DIALOG4 DIALOG DISCARDABLE 0, 0, 291, 202
                                                                STYLE DS_MODALFRAME | DS_CENTER | WS_POPUP | WS_CAPTION |
ED IIS MAX THEAD POOL LIMIT,164,263,34,12,ES RIGHT |
         ES_NUMBER,WS_EX_RTLREADING
                                                                WS SYSMENU
                                                                CAPTION "Client End User License"
                                                                FONT 8, "MS Sans Serif"
ED WEB SERVICE BACKLOG QUEUE SIZE,164,277,34,12,ES RIGHT |
         ES NUMBER, WS EX RTLREADING
                                                                BEGIN
               ED_IIS_THREAD_TIMEOUT,164,291,34,12,ES_RIGHT |
                                                                               IDC_LICENSE,7,7,271,167,ES_MULTILINE |
 EDITTEXT
                                                                  EDITTEXT
                                                                ES_AUTOVSCROLL |
ES_NUMBER,
         WS EX RTLREADING
                                                                          ES AUTOHSCROLL | ES READONLY | WS VSCROLL |
 EDITTEXT
               ED_IIS_LISTEN_BACKLOG,164,305,34,12,ES_RIGHT |
                                                                WS HSCROLL
ES NUMBER,
                                                                  DEFPUSHBUTTON "I & Agree", IDOK, 87, 181, 50, 14
         WS EX RTLREADING
                                                                  PUSHBUTTON
                                                                                 "&Cancel", IDCANCEL, 153, 181, 50, 14
 DEFPUSHBUTTON "OK", IDOK, 53, 331, 50, 14
 PUSHBUTTON
                 "Cancel",IDCANCEL,119,331,50,14
 EDITTEXT
              IDC_PATH,106,26,91,13,ES_AUTOHSCROLL |
ES READONLY
                                                                "Number of Delivery Threads:",IDC_STATIC,35,45,115,12
 LTEXT
 LTEXT
             "Max Number of Connections:",IDC STATIC,35,73,115,12
                                                                // DESIGNINFO
             "Version 4.11",IDC_VERSION,120,4,89,9
 RTEXT
 LTEXT
             "IIS Max Thread Pool Limit:",IDC STATIC,36,263,115,12
             "Web Service Backlog Queue
 LTEXT
                                                                #ifdef APSTUDIO INVOKED
Size:",IDC_STATIC,36,277,115,
                                                                GUIDELINES DESIGNINFO DISCARDABLE
                                                                BEGIN
         12
 LTEXT
             "IIS Thread Timeout (seconds):",IDC_STATIC,36,291,115,12
                                                                  IDD_DIALOG1, DIALOG
             "IIS Listen Backlog:",IDC STATIC,36,307,115,10
                                                                  BEGIN
 LTEXT
 GROUPBOX
                "Database
                                                                    LEFTMARGIN, 22
Interface",IDC_STATIC,35,208,163,27,WS GROUP
                                                                    RIGHTMARGIN, 209
 LTEXT
             "Installation directory:",IDC_STATIC,35,29,71,10
                                                                    VERTGUIDE, 35
 GROUPBOX
                "Transaction Monitor", IDC_STATIC, 33,90,165,37
                                                                    VERTGUIDE, 198
             "Server Name:",IDC_STATIC,35,155,56,8
"User ID:",IDC_STATIC,35,168,60,8
 LTEXT
                                                                    TOPMARGIN, 4
                                                                    BOTTOMMARGIN, 345
 LTEXT
 LTEXT
             "User Password:",IDC_STATIC,35,181,83,8
                                                                  END
             "Database Name:",IDC_STATIC,35,194,54,8
 LTEXT
                "SOL Server Connection
                                                                  IDD DIALOG2, DIALOG
 GROUPBOX
Properties", IDC_STATIC, 22, 139, 187,
                                                                  BEGIN
         102
                                                                    LEFTMARGIN, 7
 GROUPBOX
                "Web Client Properties", IDC STATIC, 22, 15, 187, 118
                                                                    RIGHTMARGIN, 109
 GROUPBOX
                "IIS Settings",IDC_STATIC,22,247,187,79
                                                                    TOPMARGIN, 7
 LTEXT
             "Max Pending Deliveries:",IDC_STATIC,35,59,115,12
                                                                    BOTTOMMARGIN, 54
END
IDD_DIALOG2 DIALOGEX 0, 0, 117, 62
                                                                  IDD_DIALOG3, DIALOG
STYLE DS SETFOREGROUND | DS 3DLOOK | DS CENTER |
                                                                  BEGIN
WS POPUP | WS BORDER
                                                                    LEFTMARGIN, 7
EXSTYLE WS EX STATICEDGE
                                                                    RIGHTMARGIN, 84
FONT 12, "MS Sans Serif", 0, 0, 0x1
                                                                    TOPMARGIN, 7
BEGIN
                                                                    BOTTOMMARGIN, 33
 DEFPUSHBUTTON "OK",IDOK,33,45,50,9
             "HTML TPC-C Installation
 CTEXT
Successfull", IDC RESULTS, 7,22,
                                                                  IDD DIALOG4, DIALOG
         102,18,0,WS EX CLIENTEDGE
                                                                  BEGIN
 ICON
            IDI_ICON2,IDC_STATIC,50,7,18,20,SS_REALSIZEIMAGE,
                                                                    LEFTMARGIN, 7
         WS_EX_TRANSPARENT
                                                                    RIGHTMARGIN, 278
END
                                                                    TOPMARGIN, 7
                                                                    BOTTOMMARGIN, 195
IDD_DIALOG3 DIALOG DISCARDABLE 0, 0, 91, 40
                                                                  END
                                                                END
```

```
#endif // APSTUDIO_INVOKED
                                                             BLOCK "040904b0"
                                                             BEGIN
                                                               VALUE "Comments", "TPC-C Web Client Installer\0"
                                                               VALUE "CompanyName", "Microsoft\0"
VALUE "FileDescription", "install\0"
#ifdef APSTUDIO INVOKED
VALUE "FileVersion", "0, 4, 20, 0\0"
                                                               VALUE "InternalName", "install\0"
// TEXTINCLUDE
                                                               VALUE "LegalCopyright", "Copyright © 1999\0" VALUE "OriginalFilename", "install.exe\0" VALUE "ProductName", "Microsoft install\0"
1 TEXTINCLUDE DISCARDABLE
                                                               VALUE "ProductVersion", "0, 4, 20, 0\0"
BEGIN
 "resource.h\0"
                                                             END
END
                                                           END
                                                           BLOCK "VarFileInfo"
2 TEXTINCLUDE DISCARDABLE
                                                           BEGIN
BEGIN
                                                             VALUE "Translation", 0x409, 1200
  "#include ""afxres.h""\r\n"
                                                           END
 "\0"
                                                         END
END
                                                         #endif //! MAC
3 TEXTINCLUDE DISCARDABLE
BEGIN
 "\r\n"
                                                         "\0"
END
                                                         // LICENSE
#endif // APSTUDIO INVOKED
                                                         IDR_LICENSE1
                                                                          LICENSE DISCARDABLE
                                                                                                "license.txt"
// Icon
                                                         // DBLIB DLL
// Icon with lowest ID value placed first to ensure application icon
                                                         IDR DBLIB DLL
                                                                           DBLIB DLL DISCARDABLE
// remains consistent on all systems.
                                                          "..\\..\\db dblib dll\\bin\\tpec dblib.dll"
IDI ICON1
              ICON DISCARDABLE
                                   "icon1 ico"
IDI ICON2
               ICON DISCARDABLE
                                                         "icon2.ico"
// ODBC DLL
// TPCCDLL
                                                         IDR ODBC DLL
                                                                            ODBC DLL DISCARDABLE
                                                          "..\\..\\db_odbc_dll\\bin\\tpcc_odbc.dll"
IDR TPCCDLL
                 TPCCDLL DISCARDABLE
                                                         "..\\..\\isapi_dll\\bin\\tpcc.dll"
#ifndef MAC
                                                         // TUXEDO APP
// Version
                                                         IDR_TUXEDO_APP
                                                                             TUXEDO_APP DISCARDABLE
                                                         "..\\..\\tuxapp\\bin\\tuxapp.exe"
VS VERSION INFO VERSIONINFO
                                                         FILEVERSION 0,4,20,0
PRODUCTVERSION 0,4,20,0
                                                         // TUXEDO_DLL
FILEFLAGSMASK 0x3fL
#ifdef _DEBUG
FILEFLAGS 0x1L
                                                         IDR TUXEDO DLL
                                                                             TUXEDO DLL DISCARDABLE
#else
                                                          "..\\..\\tm_tuxedo_dll\\bin\\tpcc_tuxedo.dll"
FILEFLAGS 0x0L
#endif
                                                         FILEOS 0x40004L
FILETYPE 0x1L
                                                         // COM_DLL
FILESUBTYPE 0x0L
                                                         //
BEGIN
 BLOCK "StringFileInfo"
                                                                           COM_DLL DISCARDABLE
                                                         IDR\_COM\_DLL
 BEGIN
                                                          "..\\..\\tm_com_dll\\bin\\tpcc_com.dll"
```

```
BOOL install com(char *szDllPath);
// COM_PS_DLL
                                                                  BOOL install_com(char *szDllPath)
                                                                           ICOMAdminCatalog*pCOMAdminCat = NULL;
                     COM PS DLL DISCARDABLE
                                                                           ICatalogCollection* pCatalogCollectionApp = NULL;
IDR COMPS DLL
                                                                                             pCatalogCollectionCo = NULL;
pCatalogCollectionItf = NULL;
                                                                           ICatalogCollection*
"..\\..\tpcc_com_ps\\bin\\tpcc_com_ps.dll"
                                                                           ICatalogCollection*
                                                                           ICatalogCollection*
                                                                                             pCatalogCollectionMethod = NULL;
// COM_ALL_DLL
                                                                           ICatalogObject*
                                                                                                      pCatalogObjectApp = NULL;
pCatalogObjectCo = NULL;
                                                                           ICatalogObject*
                                                                                                      pCatalogObjectItf = NULL;
                                                                           ICatalogObject*
                                                                           ICatalogObject*
                                                                                                      pCatalogObjectMethod = NULL;
IDR COMALL DLL
                      COM ALL DLL DISCARDABLE
"..\\.\\tpcc_com_all\\bin\\tpcc_com_all.dll"
                                                                            bstr t
                                                                                                               bstrTemp, bstrTemp2,
                                                                  bstrTemp3, bstrTemp4;
bstrDllPath =
                                                                            _bstr_t
// COM TYPLIB
                                                                  szDllPath;
                                                                                                      vTmp, vKey;
                                                                            variant t
                                                                                                               lActProp, lCount,
                                                                           long
IDR_COMTYPLIB_DLL
                        COM TYPLIB DISCARDABLE
                                                                  lCountCo, lCountItf, lCountMethod;
"..\\..\tpcc_com_all\\src\\tpcc_com_all.tlb"
                                                                           bool
                                                                                                               bTmp;
#endif // English (U.S.) resources
CoInitializeEx(NULL, COINIT MULTITHREADED);
                                                                           HRESULT hr = CoCreateInstance(CLSID COMAdminCatalog,
#ifndef APSTUDIO INVOKED
                                                                           NULL,
CLSCTX_INPROC_SERVER,
// Generated from the TEXTINCLUDE 3 resource.
//
                                                                           IID_ICOMAdminCatalog,
                                                                           (void**) &pCOMAdminCat);
if (!SUCCEEDED(hr)) goto Error;
#endif // not APSTUDIO_INVOKED
                                                                           bstrTemp = "Applications";
install_com.cpp
                                                                           // Attempt to connect to "Applications" in the Catalog
                                                                           hr = pCOMAdminCat->GetCollection(bstrTemp,
         FILE:
                           INSTALL COM.CPP
                                    Microsoft TPC-C Kit Ver.
                                                                           (IDispatch**) &pCatalogCollectionApp);
4.20.000
                                                                           if (!SUCCEEDED(hr)) goto Error;
                                    Copyright Microsoft, 1999
        All Rights Reserved
                                                                           // Attempt to load the "Applications" collection
                                                                           hr = pCatalogCollectionApp->Populate();
                                    not audited
                                                                           if (!SUCCEEDED(hr)) goto Error;
         PURPOSE:
                           installation code for COM application for
                                                                           hr = pCatalogCollectionApp->get_Count(&lCount);
TPC-C Web Kit
                                                                           if (!SUCCEEDED(hr)) goto Error;
                 Charles Levine (clevine@microsoft.com)
         Contact:
                                                                           // iterate through applications to delete existing "TPC-C" application
  Change history:
                                                                  (if any)
                 4.20.000 - first version
                                                                           while (lCount > 0)
                                                                                    hr = pCatalogCollectionApp->get_Item(lCount - 1,
#define WIN32 WINNT 0x0500
                                                                  (IDispatch**) &pCatalogObjectApp);
                                                                                    if (!SUCCEEDED(hr)) goto Error;
#include <comdef.h>
#include <comadmin.h>
#include <stdio.h>
                                                                                    hr = pCatalogObjectApp->get_Name(&vTmp);
                                                                                    if (!SUCCEEDED(hr)) goto Error;
#include <tchar.h>
                                                                                    if (wcscmp(vTmp.bstrVal, L"TPC-C"))
extern "C"
```

```
lCount--;
                               continue;
                                                                                        bstrTemp = "Components":
                                                                                       hr = pCatalogCollectionApp->GetCollection(bstrTemp, vKey,
                     else
                                                                             (IDispatch**) &pCatalogCollectionCo);
                                                                                       if (!SUCCEEDED(hr)) goto Error;
                               hr = pCatalogCollectionApp->Remove(lCount
-1);
                               if (!SUCCEEDED(hr)) goto Error;
                                                                                        hr = pCatalogCollectionCo->Populate();
                               break:
                                                                                       if (!SUCCEEDED(hr)) goto Error;
                     }
                                                                                       hr = pCatalogCollectionCo->get_Count(&lCountCo);
          }
                                                                                        if (!SUCCEEDED(hr)) goto Error;
          hr = pCatalogCollectionApp->SaveChanges(&lActProp);
          if (!SUCCEEDED(hr)) goto Error;
                                                                                        // iterate through components in application and set the properties
                                                                                        while (ICountCo > 0)
          // add the new application
          hr = pCatalogCollectionApp->Add((IDispatch**)
                                                                                                  hr = pCatalogCollectionCo->get Item(lCountCo - 1,
                                                                             (IDispatch**) &pCatalogObjectCo);
&pCatalogObjectApp);
          if (!SUCCEEDED(hr)) goto Error;
                                                                                                  if (!SUCCEEDED(hr)) goto Error;
          // set properties
                                                                                                  // used for debugging (view the name)
          bstrTemp = "Name";
                                                                                                  hr = pCatalogObjectCo->get Name(&vTmp);
          vTmp = "TPC-C";
                                                                                                  if (!SUCCEEDED(hr)) goto Error;
          hr = pCatalogObjectApp->put_Value(bstrTemp, vTmp);
          if (!SUCCEEDED(hr)) goto Error;
                                                                                                  bstrTemp = "ConstructionEnabled";
                                                                                                  bTmp = TRUE;
vTmp = bTmp;
          // set as a library (in process) application
          bstrTemp = "Activation";
                                                                                                  hr = pCatalogObjectCo->put_Value(bstrTemp, vTmp);
          lActProp = COMAdminActivationInproc;
                                                                                                  if (!SUCCEEDED(hr)) goto Error;
          vTmp = lActProp;
                                                                                                  bstrTemp = "ConstructorString";
bstrTemp2 = "dummy string (do not remove)";
          hr = pCatalogObjectApp->put Value(bstrTemp, vTmp);
          if (!SUCCEEDED(hr)) goto Error;
                                                                                                  vTmp = bstrTemp2:
                                                                                                  hr = pCatalogObjectCo->put Value(bstrTemp, vTmp);
          // set security level to process
          bstrTemp = "AccessChecksLevel";
                                                                                                  if (!SUCCEEDED(hr)) goto Error;
          lActProp = COMAdminAccessChecksApplicationLevel;
          vTmp = lActProp;
                                                                                                  bstrTemp = "JustInTimeActivation";
          hr = pCatalogObjectApp->put Value(bstrTemp, vTmp);
                                                                                                  bTmp = TRUE;
          if (!SUCCEEDED(hr)) goto Error;
                                                                                                  vTmp = bTmp;
                                                                                                  hr = pCatalogObjectCo->put Value(bstrTemp, vTmp);
          // save key to get the Components collection later
                                                                                                  if (!SUCCEEDED(hr)) goto Error;
          hr = pCatalogObjectApp->get_Key(&vKey);
          if (!SUCCEEDED(hr)) goto Error;
                                                                                                  bstrTemp = "MaxPoolSize";
                                                                                                  vTmp.Clear();
                                                                                                                       // clear variant so it isn't stored as a
          // save changes (app creation) so component installation will work
                                                                             bool (variant t feature)
          hr = pCatalogCollectionApp->SaveChanges(&lActProp);
                                                                                                  vTmp = (long)30;
          if (!SUCCEEDED(hr)) goto Error;
                                                                                                  hr = pCatalogObjectCo->put Value(bstrTemp, vTmp);
                                                                                                  if (!SUCCEEDED(hr)) goto Error;
          pCatalogObjectApp->Release();
          pCatalogObjectApp = NULL;
                                                                                                  bstrTemp = "ObjectPoolingEnabled";
                                                                                                  bTmp = TRUE;
          bstrTemp = "TPC-C";
                                                                                                  vTmp = bTmp;
                                                                         //
                                                                                                  hr = pCatalogObjectCo->put_Value(bstrTemp, vTmp);
app name
          bstrTemp2 =
                               bstrDllPath + "tpcc com all.dll";
                                                                         //
                                                                                                  if (!SUCCEEDED(hr)) goto Error;
DLL
                               bstrDllPath + "tpcc_com_all.tlb";
          bstrTemp3 =
                                                                         //
type library (TLB)
          bstrTemp4 =
                               bstrDllPath + "tpcc_com_ps.dll";
                                                                         //
                                                                                                  // save key to get the InterfacesForComponent collection
                                                                                                  hr = pCatalogObjectCo->get Key(&vKey);
proxy/stub dll
                                                                                                  if (!SUCCEEDED(hr)) goto Error;
          hr = pCOMAdminCat->InstallComponent(bstrTemp,
                                                                                                  bstrTemp = "InterfacesForComponent";
                                                                                                  hr = pCatalogCollectionCo->GetCollection(bstrTemp,
                               bstrTemp2,
                                                                             vKey, (IDispatch**) &pCatalogCollectionItf);
                                                                                                  if (!SUCCEEDED(hr)) goto Error;
                               bstrTemp3,
                                                                                                  hr = pCatalogCollectionItf->Populate();
                               bstrTemp4);
          if (!SUCCEEDED(hr)) goto Error;
                                                                                                  if (!SUCCEEDED(hr)) goto Error;
```

```
hr = pCatalogCollectionItf->get_Count(&lCountItf);
                    if (!SUCCEEDED(hr)) goto Error;
                    // iterate through interfaces in component
                     while (lCountItf > 0)
pCatalogCollectionItf->get_Item(lCountItf - 1, (IDispatch**)
&pCatalogObjectItf);
                               if (!SUCCEEDED(hr)) goto Error;
                               // save key to get the MethodsForInterface
collection
                               hr = pCatalogObjectItf->get Key(&vKey);
                               if (!SUCCEEDED(hr)) goto Error;
                               bstrTemp = "MethodsForInterface";
pCatalogCollectionItf->GetCollection(bstrTemp, vKey, (IDispatch**)
&pCatalogCollectionMethod);
                               if (!SUCCEEDED(hr)) goto Error;
                               hr = pCatalogCollectionMethod->Populate():
                               if (!SUCCEEDED(hr)) goto Error;
pCatalogCollectionMethod->get\_Count(\&lCountMethod);\\
                               if (!SUCCEEDED(hr)) goto Error;
                               // iterate through methods of interface
                               while (lCountMethod > 0)
pCatalogCollectionMethod->get_Item(ICountMethod - 1, (IDispatch**)
&pCatalogObjectMethod);
                                         if (!SUCCEEDED(hr)) goto Error;
                                         bstrTemp = "AutoComplete";
                                         bTmp = TRUE;
                                         vTmp = bTmp;
pCatalogObjectMethod->put Value(bstrTemp, vTmp);
                                         if (!SUCCEEDED(hr)) goto Error;
pCatalogObjectMethod->Release();
                                         pCatalogObjectMethod = NULL;
                                         lCountMethod--;
                               // save changes
                               hr
pCatalogCollectionMethod->SaveChanges(&lActProp);
                               if (!SUCCEEDED(hr)) goto Error;
                               pCatalogObjectItf->Release();
                               pCatalogObjectItf = NULL;
                               lCountItf--;
                     }
                    pCatalogObjectCo->Release();
                    pCatalogObjectCo = NULL;
```

```
lCountCo--;
         // save changes
         hr = pCatalogCollectionCo->SaveChanges(&lActProp);
         if (!SUCCEEDED(hr)) goto Error;
         pCatalogCollectionApp->Release();
         pCatalogCollectionApp = NULL;
         pCatalogCollectionCo->Release();
         pCatalogCollectionCo = NULL;
         pCatalogCollectionItf->Release();
         pCatalogCollectionItf = NULL;
         pCatalogCollectionMethod->Release();
         pCatalogCollectionMethod = NULL;
Error:
         CoUninitialize();
         if (!SUCCEEDED(hr))
                   LPTSTR lpBuf;
                  DWORD dwRes =
FormatMessage(FORMAT MESSAGE ALLOCATE BUFFER |
FORMAT_MESSAGE_FROM_SYSTEM,
         NULL,
         hr.
         MAKELANGID(LANG NEUTRAL, SUBLANG DEFAULT),
         (LPTSTR) &lpBuf,
         0,
         NULL);
                    tprintf( T("Error adding components. HRESULT:
0x\%x\n\%s"), hr, lpBuf);
                  return TRUE;
         else
                   return FALSE;
license.txt
END-USER LICENSE AGREEMENT FOR
```

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## mon\_client.c

```
mon_client.c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <stdarg.h>
#include <time.h>
#include <pthread.h>
#include <tpm/mon/mon.h>
#include <utils/trace.h>
#include "../include/delivery.h"
#include "../include/neworder.h"
#include "../include/payment.h"
#include "../include/stocklevel.h"
#include "../include/orderstatus.h"
#include "../include/tpcc_type.h"
#include "mon_client.h"
#include "client_utils.h"
extern total_tran_count_t *perfClntDataInit();
static void read_mon_environment(void);
static char *cellName;
static int envRetrieval = 0;
static int useSecurity = FALSE;
static CRITICAL_SECTION init_lock;
static total tran count t *pClientInfo=NULL; /* keep stats for the client
process */
static num_active_threads = 0;
```

```
static int iStatsFrequency = 1;
FILE *errtpcc;
char *errFile = "C:/temp/tpcc_encina.out";
enc_status_t enc_status;
#define NewOrder code NEWO TRANS
#define Payment code PAYMENT TRANS
#define OrderStatus code ORDER STAT TRANS
#define Delivery code DELIVERY TRANS
#define StockLevel code STOCK TRANS
#define INT ENV VALUE(var, default) \
 (var = getenv(#var) ? atoi(getenv(#var)) : default)
#define PRE RPC WORK(headerP, tran, sub tran) \
    if (iStatsFrequency > 0) \
                    pre_rpc(headerP, tran, sub_tran); \
          else
                    (headerP)->stats = 0;
#define POST RPC WORK(headerP, tran) \
    if (iStatsFrequency > 0)
                    post_rpc(headerP, tran)
/* CALTPCC
  Macro to sends 1 RPC and then handles any errors.
* The macro takes the name of the RPC (e.g., NewOrder)
 * and makes the RPC by calling the appropriate function
   (e.g., impTPCCNewOrder).
#define CALLTPCC(name,length,dataP,header,trpcStatusP)
 UTIL CONCAT(impTPCC,name)(length,dataP,&header,trpcStatusP);
 if (*(trpcStatusP)) {
  char msg[100];
  sprintf(msg, "TRPC error during impTPCC%s", UTIL_STRING(name)); \
  header.returncode = TRPC_ERROR;
  encina_error_message(msg, *(trpcStatusP));
  else if ((header.returncode != TPCC SUCCESS) &&
       (header.returncode != INVALID_NEWO)) {
  char msg[100];
  sprintf(msg, "App error during impTPCC%s: ", UTIL_STRING(name)); \
  encina error message(msg, header.returncode);
   pre_rpc -- For debug purposes
   Called before an RPC is made.
 * Set the state of the thread and keep track of the time the RPC is sent.
* This is used by the Background thread to report the state of the client.
static void pre_rpc(data_header *headerP,
           int tran type,
           int sub_tran_type)
  if (iStatsFrequency < 1) {
                    headerP->stats = 0;
  } else {
    int num:
    num = ++ (pClientInfo->tran[tran_type].num);
    headerP->stats = (num % iStatsFrequency==0) ? 1 : 0;
    if (headerP->stats)
                     { /* measure the time for RT */
                               get local time(&headerP->clnt start);
```

```
headerP->srv start.sec = 0; /* initialize the server time
                                                                                                              end_time.tv_sec, end_time.tv_usec,
*/
                                                                                                              time diff));
                     headerP->srv start.usec = 0;
                     headerP->srv end.sec = 0;
                                                                                          /* update num for the number of trans which have RT measured */
                     headerP->srv_end.usec = 0;
                                                                                  pClientInfo->tran[tran_type].RTcount ++;
                                                                                 The following send_*** functions are called from CTPCC_ENCINA class.
   post_rpc
   Called when the RPC returns from the server
   Keeps track of the client response time and the server response time
   as well as the state of the thread. This is used by the background
                                                                                 send new order
  debug thread to report the state of the client
                                                                                         Send a new order request to the server
static void post_rpc(data_header *headerP,
                                                                              int send_new_order(long length, unsigned char *dataP)
                        int tran type)
                                                                                 trpc_status_t trpcStatus;
  double time diff;
                                                                                 data header header;
  int tran failed;
  struct timeval start time, end time;
                                                                                 PRE RPC WORK(&header, NEWO TRANS, 0);
                                                                                 CALLTPCC(NewOrder,length,dataP,header,&trpcStatus)
                                                                                 POST_RPC_WORK(&header, NEWO_TRANS);
  if (headerP->stats)
                     get local time(&headerP->clnt end);
                                                                                 if (header.returncode == INVALID NEWO)
                                                                                         return TPCC_SUCCESS;
  else
                     return;
                                                                                else
                                                                                         return header.returncode;
  /* Store the info for each client.
   * Note: Since we don't use mutex for performance reason, pClientInfo
        may not be accurate if more than one thread work on the same
        data at a same time. But this should give us reasonable info.
                                                                                 send payment
                                                                                         Send a payment request to the server
  if ((headerP->returncode == TPCC SUCCESS) ||
    (headerP->returncode == INVALID_NEWO)) {
                                                                              int send_payment(long length, unsigned char *dataP)
   tran failed = 0;
  } else {
                                                                                 trpc_status_t trpcStatus;
                                                                                 data_header header;
   pClientInfo->tran[tran_type].errs ++;
   pClientInfo->errors ++;
   tran_failed = 1;
                                                                                 PRE RPC_WORK(&header, PAYMENT_TRANS, 0);
                                                                                 CALLTPCC(Payment,length,dataP,header,&trpcStatus);
  if (headerP->stats && tran_type <= MAX_TRAN_TYPE && tran_type > 0
                                                                                 POST_RPC_WORK(&header, PAYMENT_TRANS);
    &&!tran failed) {
                                                                                 return header.returncode;
      /* update total server round trip response time */
            start time.tv sec = headerP->srv start.sec;
            start time.tv usec = headerP->srv start.usec;
            end_time.tv_sec = headerP->srv_end.sec;
                                                                                 send_order_status
            end time.tv usec = headerP->srv end.usec;
                                                                                         Send a order status request to the server
      time_diff = time_diff_ms(&end_time, &start_time);
      pClientInfo->tran[tran type].RTtotal[1] += time diff;
                                                                              int send order status(long length, unsigned char *dataP)
            DPRINT(("srv start_time %d.%d, end_time %d.%d, time_diff
%f\n",
                                                                                 trpc status t trpcStatus;
                                start_time.tv_sec, start_time.tv_usec,
                                                                                 data header header;
                                end_time.tv_sec, end_time.tv_usec,
                                                                                 PRE RPC WORK(&header, ORDER STAT TRANS, 0);
                                time diff));
                                                                                 CALLTPCC(OrderStatus,length,dataP,header,&trpcStatus);
                                                                                 POST RPC WORK(&header, ORDER STAT TRANS);
      /* update total client round trip response time */
            start_time.tv_sec = headerP->clnt_start.sec;
                                                                                 return header.returncode;
            start time.tv usec = headerP->clnt start.usec;
            end_time.tv_sec = headerP->clnt_end.sec;
            end_time.tv_usec = headerP->clnt_end.usec;
      time_diff = time_diff_ms(&end_time, &start_time);
                                                                                 send delivery
      pClientInfo->tran[tran_type].RTtotal[0] += time_diff;
                                                                                         Send a delivery request to the server
            DPRINT(("clnt start time %d.%d, end time %d.%d, time diff
%f\n",
                                                                              int send_delivery(long length, unsigned char *dataP)
                                start_time.tv_sec, start_time.tv_usec,
```

```
trpc status t trpcStatus;
  data header header;
  PRE RPC WORK(&header, DELIVERY TRANS, 0);
  CALLTPCC(Delivery,length,dataP,header,&trpcStatus);
  POST RPC WORK(&header, DELIVERY TRANS);
  return header.returncode;
  send stock level
          Send a stock level request to the server
*/
int send_stock_level(long length, unsigned char *dataP)
  trpc_status_t trpcStatus;
  data header header;
  PRE RPC WORK(&header, STOCK TRANS, 0);
  CALLTPCC(StockLevel,length,dataP,header,&trpcStatus);
  POST_RPC_WORK(&header, STOCK_TRANS);
  return header.returncode;
  Enroll the client:
          get the necessary handles.
* This function should be called only once. Use static var client_enrolled to
control it.
void enroll client()
  static char *clientName="tpcc_client";
  unsigned long status;
  static int client enrolled = 0;
                    client authnLevel;
  unsigned32
  unsigned32
                    client_authzSvc;
  time_type a_time;
          char err msg[100];
  MUTEX INIT(&init lock);
  get_local_time(&a_time);
  srand(a_time.sec ^ a time.usec);
  MUTEX LOCK(&init lock);
  if (client enrolled) {
          MUTEX_UNLOCK(&init_lock);
                    return;
  /* open output file for tracing */
  errtpcc = fopen(errFile, "w");
  if(!errtpcc)
  {
                    sprintf(err msg, "Cannot open file %s", errFile);
                    CHK_STATUS(1,
ERROUT FILE NOT FOUND, err msg);
  get time init();
          // initialize the space for perfmon
  pClientInfo = perfClntDataInit();
  if (pClientInfo == NULL) // in case something wrong
          pClientInfo = malloc(sizeof(total tran count t));
  memset(pClientInfo, 0, sizeof(total_tran_count_t));
```

```
read_mon_environment();
  if(!cellName)
          CHK STATUS(30, CELL NAME UNAVAILABLE,
          "ENCINA_TPM_CELL is not set!");
  if (useSecurity) {
                    client_authnLevel = rpc_c_protect_level_connect;
                    client authzSvc = rpc c authz dce;
  } else {
                    client_authnLevel = rpc_c_protect_level_none;
                    client_authzSvc = rpc_c_authz_none;
  if (envRetrieval == 0) {
ENCINA CALL RC("mon RetrieveEnable",mon RetrieveEnable(FALSE),sta
    CHK STATUS(status, MON RETRIEVEENABLE FAILED,
           "mon RetrieveEnable failed");
  err printf("enroll client: calling mon InitClient \n");
ENCINA_CALL_RC("mon_InitClient",mon_InitClient(clientName,cellName),
  CHK STATUS(status, MON INITCLIENT FAILED,
         "mon_InitClient failed");
  DPRINT(("mon_SecuritySetDefaults-> authn %d, authz %d\n",
            client authnLevel. client authzSvc)):
  ENCINA_CALL_RC("mon_SecuritySetDefaults",
mon SecuritySetDefaults(client authnLevel, client authzSvc),
         status):
  CHK STATUS(status, MON SECURITYSET FAILED,
        "mon_SecuritySetDefaults failed");
  ENCINA_CALL_RC("mon_SetHandleCacheRefreshInterval",
                    mon SetHandleCacheRefreshInterval(300), status);
  CHK STATUS(status, MON SETREFRESHINTERVAL FAILED,
        "mon_SetHandleCacheRefreshInterval failed");
    dbInfo data t data;
    trpc_status_t trpcStatus;
    /* Get DB Info -- currently id does not do anything
     but it will tell us if there is a server out there.
      Better to know instead of when all the terminals
     are up and ready
    impTPCCNOInfo(&data, &trpcStatus);
    if (trpcStatus) {
      char msg[100];
      sprintf(msg, "TRPC error during db info at init.");
      encina_error_message(msg, trpcStatus);
      CHK_STATUS(33,NOINFO_TRPC_ERROR,
             "TRPC error during db info at init");
  client enrolled = 1;
  MUTEX UNLOCK(&init lock);
  err_printf("end of enroll_client\n");
```

```
Read environment paramaters and registry entries
static void read mon environment()
 char *env str;
 char *registryKey = "SOFTWARE\\TransarcCorporation\\TxTpcc";
 HKEY hKey;
 DWORD size;
 DWORD type;
 char szTmp[256];
 cellName = getenv("ENCINA TPM CELL");
 CHECK ENVIRON(cellName, "ENCINA TPM CELL");
 if (env str = getenv("TPCC ENV RETRIEVE")) {
    envRetrieval = atoi(env str);
 if ( RegOpenKeyEx(HKEY_LOCAL_MACHINE, registryKey, 0,
KEY READ, &hKey) != ERROR SUCCESS)
    return:
 size = sizeof(szTmp);
 if (RegQueryValueEx(hKey, "StatsFrequency", 0, &type, szTmp,
&size)==ERROR_SUCCESS)
    iStatsFrequency = atoi(szTmp);
 RegCloseKey(hKey);\\
}
mon client.h
```

```
mon client.h
#ifndef MON CLIENT H
#define MON_CLIENT_H
#define MUTEX T CRITICAL SECTION
#define MUTEX LOCK(a) EnterCriticalSection(a)
#define MUTEX_UNLOCK(a) LeaveCriticalSection(a)
#define MUTEX INIT(mut) InitializeCriticalSection(mut)
#define MUTEX DESTROY(mut) DeleteCriticalSection(mut)
#define ERROUT errtpcc
/*initialization status */
#define INIT_SUCCESS 0
#define INIT_FAILED 1
#define CELL NAME UNAVAILABLE 2
#define MON_RETRIEVEENABLE_FAILED 3
#define MON_INITCLIENT_FAILED 4
#define MON SECURITYSET FAILED 5
#define MON SETREFRESHINTERVAL FAILED 6
#define NOINFO_TRPC_ERROR 7
#define ENROLL CLIENT EXCEPTION 8
#define ERROUT_FILE_NOT_FOUND 9
#define LOG_FILE_NOT_FOUND 10
#define TPCC_KEY_NOT_FOUND 11
#define TERM ALLOC FAILED 12
* Routines and declarations that are common to all clients
#if defined(__cplusplus)
extern "C" {
```

```
#endif
int send_new_order(long, unsigned char *);
int send payment(long, unsigned char *);
int send_order_status(long, unsigned char *);
int send_delivery(long, unsigned char *);
int send stock level(long, unsigned char *);
void enroll client();
#if defined( cplusplus)
#endif
#endif /* MON CLIENT H */
```

### readme.txt

## ReadRegistry.cpp

```
READREGISTRY.CPP
         FILE:
                                      Microsoft TPC-C Kit Ver.
4.20.000
                                       Copyright Microsoft, 1999
         All Rights Reserved
                                      not yet audited
         PURPOSE:
                             Implementation for TPC-C Tuxedo class.
                   Charles Levine (clevine@microsoft.com)
         Contact:
  Change history:
                   4.20.000 - first version
/* FUNCTION: ReadTPCCRegistrySettings
* PURPOSE:
                   This function reads the NT registry for startup
parameters. There parameters are
                             under the TPCC key.
* RETURNS
                   FALSE = no errors
                             TRUE = error reading registry
BOOL ReadTPCCRegistrySettings( TPCCREGISTRYDATA *pReg )
         HKEY
                   hKey;
         DWORD size;
         DWORD type;
         DWORD dwTmp;
         char
                   szTmp[256];
         if (RegOpenKeyEx(HKEY_LOCAL_MACHINE,
"SOFTWARE\\Microsoft\\TPCC", 0, KEY_READ, &hKey) !=
ERROR SUCCESS)
                   return TRUE;
         // determine database protocol to use; may be either ODBC or
DBLIB
         pReg->eDB_Protocol = Unspecified;
         size = sizeof(szTmp);
         if (RegQueryValueEx(hKey, "DB Protocol", 0, &type, (BYTE
*)&szTmp, &size) == ERROR_SUCCESS)
         {
                   if (!stricmp(szTmp, szDBNames[ODBC]))
                            pReg->eDB Protocol = ODBC;
```

```
else if (!stricmp(szTmp, szDBNames[DBLIB]))
                                                                                   size = sizeof( pReg->szDbPassword );
                                                                                   if (RegQueryValueEx(hKey, "DbPassword", 0, &type, (BYTE
                              pReg->eDB Protocol = DBLIB;
                                                                         *)&pReg->szDbPassword, &size) != ERROR_SUCCESS )
          }
                                                                                            pReg->szDbPassword[0] = 0;
          pReg->eTxnMon = None;
          // determine txn monitor to use; may be either TUXEDO, or blank
                                                                                   RegCloseKey(hKey);
          size = sizeof(szTmp);
          if (RegQueryValueEx(hKey, "TxnMonitor", 0, &type, (BYTE
                                                                                   return FALSE;
*)&szTmp, &size) == ERROR SUCCESS)
                    if (!stricmp(szTmp, szTxnMonNames[TUXEDO]))
                              pReg->eTxnMon = TUXEDO;
                                                                         ReadRegistry.h
                    else if ( !stricmp(szTmp, szTxnMonNames[ENCINA]) )
                              pReg->eTxnMon = ENCINA;
                                                                                   FILE:
                                                                                                       ReadRegistry.h
                   else if (!stricmp(szTmp, szTxnMonNames[COM]))
                                                                                                                 Microsoft TPC-C Kit Ver.
                              pReg->eTxnMon = COM;
                                                                         4.20.000
                                                                                                                 Copyright Microsoft, 1999
                                                                                  All Rights Reserved
          pReg->bCOM_SinglePool = FALSE;
          size = sizeof(szTmp);
                                                                                                                 not audited
          if (RegQueryValueEx(hKey, "COM_SinglePool", 0, &type, (BYTE
*)&szTmp, &size) == ERROR SUCCESS)
                                                                                   PURPOSE:
                                                                                                       Header for registry related code.
                    if ( !stricmp(szTmp, "YES") )
                                                                           Change history:
                              pReg->bCOM_SinglePool = TRUE;
                                                                                             4.20.000 - first version
          }
          pReg->dwMaxConnections = 0;
                                                                         enum DBPROTOCOL { Unspecified, ODBC, DBLIB };
          size = sizeof(dwTmp);
                                                                         const char *szDBNames[] = { "Unspecified", "ODBC", "DBLIB" };
if ( ( RegQueryValueEx(hKey, "MaxConnections", 0, &type, (LPBYTE)&dwTmp, &size) == ERROR_SUCCESS )
                                                                         enum TXNMON { None, TUXEDO, ENCINA, COM };
                    && (type == REG DWORD)
                                                                         const char *szTxnMonNames[] = { "NONE", "TUXEDO", "ENCINA", "COM"
                   pReg->dwMaxConnections = dwTmp;
          pReg->dwMaxPendingDeliveries = 0;
                                                                         //This structure defines the data necessary to keep distinct for each terminal or
          size = sizeof(dwTmp);
                                                                         client connection.
          if ( ( RegQueryValueEx(hKey, "MaxPendingDeliveries", 0, &type,
                                                                         typedef struct _TPCCREGISTRYDATA
(LPBYTE)&dwTmp, &size) == ERROR SUCCESS)
                    && (type == REG_DWORD))
                                                                                   enum DBPROTOCOL eDB Protocol;
                   pReg->dwMaxPendingDeliveries = dwTmp;
                                                                                   enum TXNMON eTxnMon;
                                                                                   BOOL bCOM SinglePool;
          pReg->dwNumberOfDeliveryThreads = 0;
                                                                                   DWORD dwMaxConnections;
          size = sizeof(dwTmp);
                                                                                   DWORD dwMaxPendingDeliveries;
          if ( ( RegQueryValueEx(hKey, "NumberOfDeliveryThreads", 0,
                                                                                   DWORD dwNumberOfDeliveryThreads;
&type, (LPBYTE)&dwTmp, &size) == ERROR SUCCESS)
                                                                                   char szPath[128];
                    && (type == REG_DWORD))
                                                                                   char szDbServer[32];
                   pReg->dwNumberOfDeliveryThreads = dwTmp;
                                                                                   char szDbName[32];
                                                                                   char szDbUser[32];
size = sizeof( pReg->szPath );
if ( RegQueryValueEx(hKey, "Path", 0, &type, (BYTE *)&pReg->szPath, &size) != ERROR_SUCCESS )
                                                                                   char szDbPassword[32];
                                                                         } TPCCREGISTRYDATA, *PTPCCREGISTRYDATA;
                   pReg > szPath[0] = 0;
                                                                         BOOL ReadTPCCRegistrySettings( TPCCREGISTRYDATA *pReg );
          size = sizeof( pReg->szDbServer );
          if (RegQueryValueEx(hKey, "DbServer", 0, &type, (BYTE
*)&pReg->szDbServer, &size) != ERROR SUCCESS )
                                                                         Resource.h
                   pReg->szDbServer[0] = 0;
          size = sizeof( pReg->szDbName );
                                                                         //{{NO DEPENDENCIES}}
          if (RegQueryValueEx(hKey, "DbName", 0, &type, (BYTE
                                                                         // Microsoft Developer Studio generated include file.
*)&pReg->szDbName, &size) != ERROR SUCCESS )
                                                                         // Used by install.rc
                    pReg->szDbName[0] = 0;
                                                                         #define IDD DIALOG1
                                                                                                          101
          size = sizeof( pReg->szDbUser );
                                                                         #define IDI ICON1
                                                                                                       102
          if (RegQueryValueEx(hKey, "DbUser", 0, &type, (BYTE
                                                                         #define IDR_TPCCDLL
                                                                                                          103
*)&pReg->szDbUser, &size) != ERROR SUCCESS )
                                                                         #define IDD_DIALOG2
                                                                                                          105
                    pReg->szDbUser[0] = 0;
                                                                         #define IDI TCON2
                                                                                                       106
                                                                         #define IDR_DELIVERY
```

```
#define IDD DIALOG3
                                                                       #define APS NEXT RESOURCE VALUE
                                108
#define IDR LICENSE1
                                112
                                                                       #define APS NEXT COMMAND VALUE
                                                                                                                   40001
#define IDD DIALOG4
                                113
                                                                       #define _APS_NEXT_CONTROL_VALUE
                                                                                                                  1000
#define IDR TPCCOBJ1
                                117
                                                                       #define _APS_NEXT_SYMED_VALUE
                                                                                                                101
#define IDR TPCCSTUB1
                                                                       #endif
                                 118
#define IDR DBLIB DLL
                                 122
                                                                       #endif
#define IDR_ODBC_DLL
                                 123
                                                                       rtetime.h
#define IDR_TUXEDO_APP
                                   124
#define IDR TUXEDO DLL
                                   125
                                                                       /* FILE: rtetime.h : header file
#define IDR COM DLL
                                 126

    * Copyright 1997 Microsoft Corp., All rights reserved.

#define IDR_COMPS_DLL
                                  127
#define IDR_COMALL_DLL
                                   128
                                                                       * Authors: Charles Levine, Philip Durr
#define IDR COMTYPLIB DLL
                                     129
                                                                                                    Microsoft Corp.
#define BN LOG
                             1001
#define ED KEEP
                             1002
#define ED THREADS
                                1003
                                                                       #define
                                                                              MAX JULIAN TIME
#define ED_THREADS2
#define IDC_PATH
                                 1004
                                                                       0x7FFFFFFFFFFFFFF
                              1007
                                                                       #define JULIAN TIME
                                                                                                     int64
#define IDC VERSION
                                1009
                                                                                                    DWORD
                                                                       #define TC_TIME
#define IDC RESULTS
                                1010
                                                                       extern "C"
#define IDC_PROGRESS1
                                 1011
#define IDC_STATUS
#define IDC_BUTTON1
                               1012
                                                                       BOOL
                                                                                          InitJulianTime(LPSYSTEMTIME lpInitTime);
                                1013
                                                                       JULIAN TIME
                                                                                          GetJulianTime(void);
#define ED MAXCONNECTION
                                                                       DWORD
                                                                                          MvTickCount(void):
#define ED_IIS_MAX_THEAD_POOL_LIMIT
                                           1015
                                                                                          GetJulianAndTC(JULIAN TIME *pJulian, DWORD
                                                                       void
#define ED_MAXDELIVERIES
                                    1016
                                                                       *pTC);
#define ED WEB SERVICE BACKLOG QUEUE SIZE 1017
                                                                       JULIAN TIME
                                                                                          ConvertTo64BitTime(int iYear, int iMonth, int iDay, int
#define ED_IIS_THREAD_TIMEOUT
                                        1018
                                                                       iHour, int iMinute, int iSecond);
#define ED IIS LISTEN BACKLOG
                                       1019
                                                                                          Get64BitTime(LPSYSTEMTIME lpInitTime);
                                                                       JULIAN TIME
#define IDC_DBLIB
                              1021
                                                                                                    JulianDay( int yr, int mm, int dd );
                                                                       int
#define IDC_LICENSE
#define IDC_ODBC
                               1022
                                                                                          JulianToTime(JULIAN_TIME julianTS, int* yr, int*
                                                                       void
                              1022
                                                                       mm, int* dd, int *hh, int *mi, int *ss );
#define IDC CONNECT POOL
                                     1023
                                                                                          JulianToCalendar( int day, int* yr, int* mm, int* dd );
                                                                       void
#define ED DB SERVER
                                  1023
#define ED_USER_CONNECT_DELAY_TIME
                                             1024
#define ED_DB_USER_ID
                                 1024
#define IDC MTS
                             1025
                                                                       spinlock.h
#define IDC TM MTS
                                1025
#define IDC_TM_TUXEDO
                                   1026
#define IDC_TM_NONE
                                 1027
                                                                                FILE: SPINLOCK.H
#define ED DB PASSWORD
                                    1028
#define ED_DB_NAME
                                 1029
                                                                        * Copyright 1997 Microsoft Corp., All rights reserved.
#define IDC TM ENCINA
                                  1030
                                                                       * Authors: Mike Parkes, Charles Levine, Philip Durr
// Next default values for new objects
                                                                                                    Microsoft Corp.
#ifdef APSTUDIO INVOKED
#ifndef APSTUDIO READONLY SYMBOLS
                                                                       #ifndef_INC_Spinlock
#define _APS_NEXT_RESOURCE_VALUE
                                           130
#define APS NEXT COMMAND VALUE
                                            40001
                                                                                const LONG LockClosed
#define APS NEXT CONTROL VALUE
                                           1031
                                                                                const LONG LockOpen
                                                                                                                       = 0:
#define APS NEXT SYMED VALUE
#endif
#endif
                                                                                   Spinlock and Semaphore locking.
Resource_tpcc_rc.h
                                                                                   This class provides a very conservative locking scheme.
                                                                                   The assumption behind the code is that locks will be
//{{NO DEPENDENCIES}}
                                                                                   held for a very short time. When a lock is taken a memory
// Microsoft Developer Studio generated include file.
                                                                                    location is exchanged. All other threads that want this
// Used by tpcc.rc
                                                                                   lock wait by spinning and sometimes sleeping on a semaphore
                                                                                   until it becomes free again. The only other choice is not
#define IDD DIALOG1
                                101
                                                                                   to wait at all and move on to do something else. This
                                                                                   module should normally be used in conjunction with cache
// Next default values for new objects
                                                                                    aligned memory in minimize cache line misses.
#ifdef APSTUDIO INVOKED
```

#ifndef APSTUDIO\_READONLY\_SYMBOLS

```
inline BOOL Spinlock::ClaimLock( BOOL Wait )
                                                                                                 if (! ClaimSpinlock( (volatile LONG*) & m Spinlock ))
          class Spinlock
                                                                                                            if (Wait)
                                                                                                                      WaitForLock();
                    // Private data.
                    HANDLE
                                            Semaphore;
                                                                                                            return Wait;
                     volatile LONG
                                            m_Spinlock;
                     volatile LONG
                                            Waiting;
                                                                                                 return TRUE;
                     #ifdef _DEBUG
                               // Counters for debugging builds.
                               volatile LONG
                                                    TotalLocks;
                                                    TotalSleeps;
                               volatile LONG
                               volatile LONG
                                                    TotalSpins;
                                                                                          Release the Spinlock.
                               volatile LONG
                                                    TotalWaits;
                     #endif
                                                                                          Release the lock and if needed wakeup any sleepers.
                    public:
                                                                                                    ************
                               // Public functions.
                               Spinlock( void );
                                                                                       inline void Spinlock::ReleaseLock( void )
                               inline BOOL ClaimLock( BOOL Wait =
                                                                                                 m Spinlock = LockOpen;
TRUE);
                                                                                                 if (Waiting > 0)
                               inline void ReleaseLock( void );
                                                                                                            WakeAllSleepers();
                               ~Spinlock( void );
                               // Disabled operations.
                               Spinlock( const Spinlock & Copy );
                                                                                       #define _INC_Spinlock
                               void operator=( const Spinlock & Copy );
                                                                            #endif
                    private:
                               // Private functions.
                               inline BOOL ClaimSpinlock(volatile LONG
                                                                             tpcc.cpp
*sl );
                               void WaitForLock( void );
                                                                                       FILE:
                                                                                                            TPCC.C
                               void WakeAllSleepers( void );
                                                                                                                      Microsoft TPC-C Kit Ver.
          };
                                                                            4.20.000
                                                                                                                      Copyright Microsoft, 1999
                                                                                      All Rights Reserved
                                                                                                                      Version 4.10.000 audited by
             A guaranteed atomic exchange.
                                                                            Richard Gimarc, Performance Metrics, 3/17/99
             An attempt is made to claim the Spinlock. This action is
                                                                                       PURPOSE:
                                                                                                            Main module for TPCC.DLL which is an
             guaranteed to be atomic.
                                                                            ISAPI service dll.
                                                                                       Contact:
                                                                                                 Charles Levine (clevine@microsoft.com)
                                                                             * Change history:
                                                                                                 4.20.000 - reworked error handling; added options for
          inline BOOL Spinlock::ClaimSpinlock( volatile LONG *Spinlock )
                                                                            COM and Encina txn monitors
                     #ifdef _DEBUG
                               InterlockedIncrement( (LPLONG) &
                                                                            #include <windows.h>
TotalLocks);
                                                                            #include cess.h>
                    #endif
                                                                            #include <tchar.h>
                    return ( ((*Spinlock) == LockOpen) &&
                                                                            #include <stdio.h>
(InterlockedExchange( (LPLONG)Spinlock, LockClosed ) == LockOpen) );
                                                                            #include <stdarg.h>
                                                                            #include <malloc.h>
                                                                            #include <stdlib.h>
                                                                            #include <string.h>
                                                                            #include <time.h>
             Claim the Spinlock.
                                                                            #include <sys\timeb.h>
                                                                            #include <io.h>
             Claim the lock if available else wait or exit.
                                                                            #include <assert.h>
                                                                            #include <sqltypes.h>
```

```
#ifdef ICECAP
                                                                           CTxnLog
#include <icapexp.h>
                                                                                                                              *txnDelilog = NULL;
#endif
                                                                                     //used to log delivery transaction information
#include "..\..\common\src\trans.h"
                                                                                                                              hWorkerSemaphore =
                                                   //tpckit transaction
                                                                           HANDLE
header contains definations of structures specific to TPC-C
                                                                           INVALID HANDLE VALUE;
#include "..\..\common\src\error.h"
                                                                           HANDLE
                                                                                                                              hDoneEvent
#include "..\..\common\src\txn base.h"
                                                                                     = INVALID_HANDLE_VALUE;
#include "..\..\common\src\ReadRegistry.h"
                                                                           HANDLE
                                                                                                                              *pDeliHandles
                                                                           = NULL;
#include "..\..\common\txnlog\include\rtetime.h"
#include "..\..\common\txnlog\include\spinlock.h"
                                                                           // configuration settings from registry
#include "..\..\common\txnlog\include\txnlog.h"
                                                                           TPCCREGISTRYDATA
                                                                                                                    Reg;
// Database layer includes
                                                                           DWORD
#include "..\..\db dblib dll\src\tpcc dblib.h"
                                                   // DBLIB
implementation of TPC-C txns
                                                                           dwNumDeliveryThreads = 4;
#include "..\..\db_odbc_dll\src\tpcc_odbc.h"
                                                                           CRITICAL SECTION
                                                   // ODBC
                                                                                                                    DelBuffCriticalSection;
implementation of TPC-C txns
                                                                           //critical section for delivery transactions cache
                                                                           DELIVERY TRANSACTION *pDelBuff
                                                                                                                                         = NULL;
// Txn monitor layer includes
                                                                           DWORD
                                                                                                                              dwDelBuffSize
#include "..\..\tm com dll\src\tpcc com.h"
                                                             // COM
                                                                           = 100;
                                                                                               // size of circular buffer for delivery txns
                                                                           DWORD
Services implementation on TPC-C txns
                                                                                                                              dwDelBuffFreeCount;
#include "..\..\tm tuxedo dll\src\tpcc tux.h"
                                                   // interface to Tuxedo
                                                                                                          // number of buffers free
libraries
                                                                           DWORD
                                                                                                                              dwDelBuffBusyIndex =
#include "..\..\tm_encina_dll\src\tpcc_enc.h"
                                                                                               // index position of entry waiting to be delivered
                                                   // interface to Encina
                                                                           0.
libraries
                                                                           DWORD
                                                                                                                              dwDelBuffFreeIndex =
                                                                                               // index position of unused entry
                                                                           0:
#include "httpext.h"
                                                   //ISAPI DLL
                                                                           #include "..\..\common\src\ReadRegistry.cpp"
information header
#include "tpcc.h"
                                                             //this dlls
specific structure, value e.t. header.
                                                                           /* FUNCTION: DllMain
                                                                            * PURPOSE:
                                                                                                This function is the entry point for the DLL. This
#define
         LEN_ERR_STRING 256
                                                                           implementation is based on the
                                                                                                          fact that DLL PROCESS ATTACH is only
// defines for Make<Txn>Form calls to distinguish input and output flavors
                                                                           called from the inet service once.
#define OUTPUT FORM
                                                                            * ARGUMENTS:
#define INPUT_FORM
                                                                                              HANDLE hModule
                                                                           module handle
                                                                                                                    DWORD ul reason for call
szMyComputerName[MAX_COMPUTERNAME_LENGTH+1];
                                                                           reason for call
                                                                                                                    LPVOID lpReserved
                                                                           reserved for future use
//Terminal client id structure
         Term = \{0, 0, 0, \text{NULL}\};
TERM
                                                                            * RETURNS:
                                                                                                          BOOL
                                                                                                                    FALSE
// The WEBCLIENT_VERSION string specifies the version level of this web
                                                                           errors occured in initialization
                                                                                                                                         TRUE
client interface.
// The RTE must be synchronized with the interface level on login, otherwise
                                                                                               DLL successfully initialized
the login
// will fail. This is a sanity check to catch problems resulting from mismatched
                                                                           BOOL APIENTRY DllMain(HANDLE hModule, DWORD ul reason for call,
versions
// of the RTE and web client.
                                                                           LPVOID lpReserved)
#define WEBCLIENT VERSION "410"
                                                                                     DWORD i;
                                                                                     char szEvent[LEN ERR STRING] = "\0";
          CRITICAL_SECTION
                                                   TermCriticalSection;
static
                                                                                     char szLogFile[128];
static HINSTANCE hLibInstanceTm = NULL;
                                                                                     char szDllName[128];
static HINSTANCE hLibInstanceDb = NULL;
                                                                           // debugging...
TYPE CTPCC DBLIB
                               *pCTPCC DBLIB new;
                                                                           // DebugBreak();
TYPE_CTPCC_ODBC
                                         *pCTPCC_ODBC_new;
TYPE_CTPCC_TUXEDO *pCTPCC_TUXEDO TYPE_CTPCC_ENCINA *pCTPCC_ENCINA_new;
                              *pCTPCC_TUXEDO_new;
                                                                                     try
TYPE_CTPCC_ENCINA *pCTPCC_ENCINA_post_init;
                                                                                               switch(ul_reason_for_call)
                              *pCTPCC_COM new;
TYPE CTPCC COM
                                                                                                          case DLL_PROCESS_ATTACH:
// For deferred Delivery txns:
```

```
DWORD dwSize =
MAX COMPUTERNAME LENGTH+1;
                                                                      pCTPCC ENCINA new = (TYPE CTPCC ENCINA*)
                                                                      GetProcAddress(hLibInstanceTm, "CTPCC ENCINA new");
GetComputerName(szMyComputerName, &dwSize);
                                                                      pCTPCC_ENCINA_post init = (TYPE CTPCC ENCINA*)
szMyComputerName[dwSize] = 0;
                                                                      GetProcAddress(hLibInstanceTm,"CTPCC ENCINA post init");
                                      }
                                                                      (pCTPCC ENCINA new == NULL)
                                                                                                                                throw new
                                                                      CWEBCLNT ERR( ERR GETPROCADDR FAILED, szDllName,
DisableThreadLibraryCalls((HMODULE)hModule);
                                                                      GetLastError() );
InitializeCriticalSection(&TermCriticalSection);
                                                                                                            else if (Reg.eTxnMon == COM)
                                      if (ReadTPCCRegistrySettings(
&Reg))
                                                                                                                      strcpy( szDllName,
                                                throw new
                                                                      Reg.szPath);
CWEBCLNT ERR( ERR MISSING REGISTRY ENTRIES );
                                                                                                                      strcat( szDllName,
                                                                      "tpcc_com.dll");
                                                                                                                      hLibInstanceTm =
                                      dwDelBuffSize = min(
Reg.dwMaxPendingDeliveries, 10000); // min with 10000 as a sanity
                                                                      LoadLibrary( szDllName );
                                                                                                                      if (hLibInstanceTm ==
constraint
                                      dwNumDeliveryThreads = min(
                                                                      NULL)
Reg.dwNumberOfDeliveryThreads, 100); // min with 100 as a sanity constraint
                                                                                                                                throw new
                                                                      CWEBCLNT ERR( ERR LOADDLL FAILED, szDllName, GetLastError() );
                                      TermInit();
                                                                                                                      // get function pointer
                                      // load DLL for txn monitor
                                                                      to wrapper for class constructor
                                      if(Reg.eTxnMon == TUXEDO)
                                                                                                                      pCTPCC_COM_new =
                                                                      (TYPE CTPCC COM*)
                                                                      GetProcAddress(hLibInstanceTm,"CTPCC_COM_new");
                                               strcpy( szDllName,
Reg.szPath);
                                                strcat( szDllName,
                                                                      (pCTPCC_COM_new == NULL)
"tpcc tuxedo.dll");
                                                                                                                                throw new
                                               hLibInstanceTm =
                                                                      CWEBCLNT ERR( ERR GETPROCADDR FAILED, szDllName,
LoadLibrary( szDllName );
                                                                      GetLastError() );
                                                if (hLibInstanceTm ==
NULL)
                                                                                                            // load DLL for database
                                                         throw new
CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName, GetLastError() );
                                                                      connection
                                                                                                            if ((Reg.eTxnMon == None) ||
                                               // get function pointer
                                                                      (dwNumDeliveryThreads > 0))
to wrapper for class constructor
                                                                                                                      if (Reg.eDB Protocol
pCTPCC_TUXEDO_new = (TYPE_CTPCC TUXEDO*)
                                                                      == DBLIB)
GetProcAddress(hLibInstanceTm, "CTPCC TUXEDO new");
                                                                                                                                strcpy(
(pCTPCC TUXEDO new == NULL)
                                                                      szDllName, Reg.szPath );
                                                         throw new
                                                                                                                                strcat(
CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName,
                                                                      szDllName, "tpcc_dblib.dll");
GetLastError());
                                                                      hLibInstanceDb = LoadLibrary( szDllName );
                                      else if (Reg.eTxnMon ==
                                                                                                                                if
ENCINA)
                                                                      (hLibInstanceDb == NULL)
                                                                      throw new CWEBCLNT ERR( ERR LOADDLL FAILED, szDllName,
                                                strcpy( szDllName,
Reg.szPath);
                                                                      GetLastError() );
                                               strcat( szDllName,
"tpcc_encina.dll");
                                                                                                                                // get
                                               hLibInstanceTm =
                                                                      function pointer to wrapper for class constructor
LoadLibrary( szDllName );
                                                if (hLibInstanceTm ==
                                                                      pCTPCC DBLIB new = (TYPE CTPCC DBLIB*)
NULL)
                                                                      GetProcAddress(hLibInstanceDb,"CTPCC DBLIB new");
                                                                                                                                if
                                                         throw new
CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName, GetLastError() );
                                                                      (pCTPCC_DBLIB_new == NULL)
                                               // get function pointer
to wrapper for class constructor
                                                                      throw new CWEBCLNT ERR( ERR GETPROCADDR FAILED, szDllName,
                                                                      GetLastError());
```

```
pDelBuff = new
                                                  else if
                                                                         DELIVERY TRANSACTION[dwDelBuffSize];
(Reg.eDB Protocol == ODBC)
                                                                                                                           // launch
                                                            strcpy(
                                                                         DeliveryWorkerThread to perform actual delivery txns
szDllName, Reg.szPath );
                                                                                                                           for(i=0;
                                                                         i<dwNumDeliveryThreads; i++)
                                                            strcat(
szDllName, "tpcc odbc.dll");
                                                                                                                           {
hLibInstanceDb = LoadLibrary( szDllName );
                                                                         pDeliHandles[i] = (HANDLE) _beginthread( DeliveryWorkerThread, 0, NULL
                                                            if
(hLibInstanceDb == NULL)
                                                                                                                                      if
                                                                         (pDeliHandles[i] == INVALID_HANDLE_VALUE)
throw new CWEBCLNT ERR( ERR LOADDLL FAILED, szDllName,
                                                                         throw new CWEBCLNT_ERR( ERR_DELIVERY_THREAD_FAILED );
GetLastError());
                                                            // get
function pointer to wrapper for class constructor
                                                                                                                 break;
pCTPCC ODBC new = (TYPE CTPCC ODBC*)
GetProcAddress(hLibInstanceDb,"CTPCC ODBC new");
                                                                                                       case DLL PROCESS DETACH:
                                                                                                                 if (dwNumDeliveryThreads)
(pCTPCC ODBC new == NULL)
                                                                                                                           if (txnDelilog !=
throw new CWEBCLNT ERR( ERR GETPROCADDR FAILED, szDllName,
                                                                         NULL)
GetLastError());
                                                                                                                                      //write event
                                                                         into txn log for STOP
                                        if (dwNumDeliveryThreads)
                                                                         txnDelilog->WriteCtrlRecToLog(TXN EVENT STOP, szMyComputerName,
                                                                         sizeof(szMyComputerName));
                                                  // for deferred delivery
txns:
                                                                                                                                      // This will
                                                  hDoneEvent =
                                                                         do a clean shutdown of the delivery log file
CreateEvent( NULL, TRUE /* manual reset */, FALSE /* initially not signalled
                                                                                                                                      CTxnLog
*/, NULL);
                                                                          *txnDelilogLocal = txnDelilog;
                                                                                                                                      txnDelilog=
Initialize Critical Section (\& Del Buff Critical Section);\\
                                                                         NULL;
                                                  hWorkerSemaphore =
                                                                                                                                      delete
CreateSemaphore( NULL, 0, dwDelBuffSize, NULL );
                                                                         txnDelilogLocal;
                                                  dwDelBuffFreeCount =
dwDelBuffSize;
                                                                                                                           delete [] pDeliHandles;
                                                  InitJulianTime(NULL);
                                                                                                                           delete [] pDelBuff;
                                                                                                                           CloseHandle(
                                                  // create unique log file
name based on delilog-yymmdd-hhmm.log
                                                                         hWorkerSemaphore );
                                                  SYSTEMTIME Time;
                                                                                                                           CloseHandle(
                                                  GetLocalTime( &Time
                                                                         hDoneEvent);
);
                                                                          DeleteCriticalSection(&DelBuffCriticalSection);
                                                  wsprintf( szLogFile,
"%sdelivery-%2.2d%2.2d%2.2d-%2.2d%2.2d.log",
Reg.szPath, Time.wYear % 100, Time.wMonth, Time.wDay, Time.wHour,
Time.wMinute );
                                                                         DeleteCriticalSection(&TermCriticalSection);
                                                  txnDelilog = new
CTxnLog(szLogFile, TXN_LOG_WRITE);
                                                                                                                 if (hLibInstanceTm != NULL)
                                                                                                                           FreeLibrary(
                                                  //write event into txn
                                                                         hLibInstanceTm );
log for START
                                                                                                                 hLibInstanceTm = NULL;
txnDelilog->WriteCtrlRecToLog(TXN EVENT START,
                                                                                                                 if (hLibInstanceDb != NULL)
szMyComputerName, sizeof(szMyComputerName));
                                                                                                                           FreeLibrary(
                                                                         hLibInstanceDb );
                                                  // allocate structures for
                                                                                                                 hLibInstanceDb = NULL;
delivery buffers and thread mgmt
                                                  pDeliHandles = new
                                                                                                                 Sleep(500);
HANDLE[dwNumDeliveryThreads];
                                                                                                                 break;
```

```
default:
                                        /* nothing */;
                    }
          catch (CBaseErr *e)
                    WriteMessageToEventLog( e->ErrorText() );
                    delete e;
                    TerminateExtension(0);
                   return FALSE;
          catch (...)
                    WriteMessageToEventLog(TEXT("Unhandled
exception. DLL could not load."));
                    TerminateExtension(0);
                   return FALSE;
          return TRUE;
}
/* FUNCTION: GetExtensionVersion
* PURPOSE:
                   This function is called by the inet service when the DLL
is first loaded.
* ARGUMENTS: HSE VERSION INFO
                                                  *pVer
                                                            passed in
structure in which to place expected version number.
* RETURNS:
                              TRUE
                                        inet service expected return value.
BOOL WINAPI GetExtensionVersion(HSE_VERSION_INFO *pVer)
          pVer->dwExtensionVersion =
MAKELONG(HSE VERSION MINOR, HSE VERSION MAJOR);
          lstrcpyn(pVer->lpszExtensionDesc, "TPC-C Server.",
HSE_MAX_EXT_DLL_NAME_LEN);
          // TODO: why do we need this here instead of in the DLL attach?
          if(Reg.eTxnMon == ENCINA)
                   pCTPCC_ENCINA_post_init();
          return TRUE;
}
/* FUNCTION: TerminateExtension
* PURPOSE:
                   This function is called by the inet service when the DLL
is about to be unloaded.
                              Release all resources in anticipation of being
unloaded.
* RETURNS:
                              TRUE
                                        inet service expected return value.
BOOL WINAPI TerminateExtension( DWORD dwFlags )
          if (pDeliHandles)
                    SetEvent( hDoneEvent );
                    for(DWORD i=0; i<dwNumDeliveryThreads; i++)
                              WaitForSingleObject( pDeliHandles[i],
INFINITE);
```

```
TermDeleteAll();
          return TRUE;
/* FUNCTION: HttpExtensionProc
* PURPOSE:
                    This function is the main entry point for the TPCC DLL.
The internet service
                              calls this function passing in the http string.
* ARGUMENTS:
                    EXTENSION CONTROL BLOCK
                                                            *pECB
structure pointer to passed in internet
                                        service information.
* RETURNS:
                              DWORD HSE STATUS SUCCESS
                              connection can be dropped if error
HSE STATUS SUCCESS AND KEEP CONN
                                                  keep connect valid
comment sent
* COMMENTS:
                    None
DWORD WINAPI HttpExtensionProc(EXTENSION CONTROL BLOCK
*pECB)
                                        iCmd, FormId, TermId, iSyncId;
          int
          char
                              szBuffer[4096];
                                        lpbSize;
          int
          static char szHeader[] = "200 Ok";
          DWORD
                              dwSize = 6;
                                                            // initial
value is strlen(szHeader)
          char
                              szHeader1[4096];
#ifdef ICECAP
          StartCAP();
#endif
          try
                    //process http query
                    ProcessQueryString(pECB, &iCmd, &FormId, &TermId,
&iSyncId);
                    if (TermId != 0)
                              if ( TermId < 0 || TermId >=
Term.iNumEntries || Term.pClientData[TermId].iNextFree != -1 )
                                        // debugging...
                                        char szTmp[128];
                                        wsprintf( szTmp, "Invalid term ID;
TermId = \%d", TermId);
                                        WriteMessageToEventLog( szTmp
                                        throw new CWEBCLNT ERR(
ERR_INVALID_TERMID );
                              //must have a valid syncid here since termid is
valid
```

```
if (iSyncId !=
                                                                                              case 6:
Term.pClientData[TermId].iSyncId)
                                                                                                        // stock-level selected from menu; display
                                        throw new CWEBCLNT ERR(
                                                                          stock-level input form
ERR_INVALID_SYNC_CONNECTION );
                                                                                                        MakeStockLevelForm(TermId, NULL,
                                                                          INPUT FORM, szBuffer);
                                                                                                        break;
                              Term.pClientData[TermId].iTickCount =
                                                                                              case 7:
GetTickCount();
                                                                                                        // ExitCmd
                                                                                                        TermDelete(TermId);
                                                                                                        WelcomeForm(pECB, szBuffer);
                                                                                                        break;
                    switch(iCmd)
                                                                                              case 8:
                                                                                                        SubmitCmd(pECB, szBuffer);
                    case 0:
                                                                                                        break:
                              WelcomeForm(pECB, szBuffer);
                                                                                              case 9:
                              break;
                                                                                                        // menu
                    case 1:
                                                                                                        MakeMainMenuForm(TermId,
                                                                          Term.pClientData[TermId].iSyncId, szBuffer);
                              switch(FormId)
                                                                                                        break:
                                        case WELCOME FORM:
                                                                                              case 10:
                                        case MAIN_MENU_FORM:
                                                                                                        // CMD=Clear
                                                  break;
                                                                                                        // resets all connections; should only be used
                                        case NEW_ORDER_FORM:
                                                                          when no other connections are active
                                                                                                        TermDeleteAll();
ProcessNewOrderForm(pECB, TermId, szBuffer);
                                                                                                        TermInit();
                                                                                                        WelcomeForm(pECB, szBuffer);
                                                  break:
                                        case PAYMENT FORM:
                                                                                                        break;
                                                                                                       // CMD=Stats
                                                                                              case 11:
ProcessPaymentForm(pECB, TermId, szBuffer);
                                                                                                        StatsCmd(pECB, szBuffer);
                                                  break:
                                                                                                        break:
                                        case DELIVERY FORM:
ProcessDeliveryForm(pECB, TermId, szBuffer);
                                                                                    catch (CBaseErr *e)
                                                  break;
                                        case ORDER_STATUS_FORM:
                                                                                              ErrorForm( pECB, e->ErrorType(), e->ErrorNum(),
                                                                          TermId, iSyncId, e->ErrorText(), szBuffer );
ProcessOrderStatusForm(pECB, TermId, szBuffer);
                                                                                              delete e;
                                                  break;
                                        case STOCK_LEVEL_FORM:
                                                                                    catch (...)
                                                                                    {
                                                                                              ErrorForm( pECB, ERR TYPE WEBDLL, 0, TermId,
ProcessStockLevelForm(pECB, TermId, szBuffer);
                                                                          iSyncId, "Error: Unhandled exception in Web Client.", szBuffer );
                                                  break:
                              break:
                                                                          #ifdef ICECAP
                    case 2:
                              // new-order selected from menu; display
                                                                                    StopCAP();
new-order input form
                                                                          #endif
                              MakeNewOrderForm(TermId, NULL,
INPUT_FORM, szBuffer);
                                                                                    lpbSize = strlen(szBuffer);
                              break;
                   case 3:
                                                                                    wsprintf(szHeader1,
                                                                                                         'Content-Type: text/html\r\n"
                              // payment selected from menu; display
payment input form
                                                                                                        "Content-Length: %d\r\n"
                              MakePaymentForm(TermId, NULL,
                                                                                                        "Connection: Keep-Alive\r\n\r\n", lpbSize);
INPUT FORM, szBuffer);
                                                                                    streat( szHeader1, szBuffer );
                              break;
                                                                                   (*pECB->ServerSupportFunction)(pECB->ConnID,
                   case 4:
                                                                          HSE REQ_SEND_RESPONSE_HEADER, szHeader, (LPDWORD) &dwSize,
                              // delivery selected from menu; display
                                                                          (LPDWORD)szHeader1);
delivery input form
                              MakeDeliveryForm(TermId, NULL,
INPUT FORM, szBuffer);
                                                                                    //finish up and keep connection
                              break;
                                                                                    pECB->dwHttpStatusCode = 200;
                                                                                    return HSE_STATUS_SUCCESS_AND_KEEP_CONN;
                   case 5:
                              // order-status selected from menu; display
order-status input form
                              MakeOrderStatusForm(TermId, NULL,
INPUT_FORM, szBuffer);
                                                                          void WriteMessageToEventLog(LPTSTR lpszMsg)
                              break;
```

```
TCHAR szMsg[256];
                                                                                                          pTxn = pCTPCC ODBC new(
  HANDLE hEventSource;
                                                                           Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword, szMyComputerName,
  LPTSTR lpszStrings[2];
                                                                           Reg.szDbName);
                                                                                                else if (Reg.eDB_Protocol == DBLIB)
                                                                                                          pTxn = pCTPCC_DBLIB new(
  // Use event logging to log the error.
                                                                           Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword, szMyComputerName,
  hEventSource = RegisterEventSource(NULL, TEXT("TPCC.DLL"));
                                                                           Reg.szDbName);
                                                                                                pDeliveryData = pTxn->BuffAddr Delivery();
   stprintf(szMsg, TEXT("Error in TPCC.DLL: "));
  lpszStrings[0] = szMsg;
                                                                                      catch (CBaseErr *e)
  lpszStrings[1] = lpszMsg;
                                                                                                char szTmp[1024];
  if (hEventSource != NULL)
                                                                                                wsprintf( szTmp, "Error in Delivery Txn thread. Could
                                                                           not connect to database.
    ReportEvent(hEventSource, // handle of event source
                                                                                                                     "%s. Server=%s, User=%s,
      EVENTLOG_ERROR_TYPE, // event type
                                                                           Password=%s, Database=%s",
      0,
                    // event category
                                                                                                                     e->ErrorText(), Reg.szDbServer,
      0,
                    // event ID
                                                                            Reg.szDbUser, Reg.szDbPassword, Reg.szDbName);
      NULL,
                       // current user's SID
                                                                                                WriteMessageToEventLog( szTmp );
      2,
                    // strings in lpszStrings
                                                                                                delete e;
      0
                    // no bytes of raw data
                                                                                                goto ErrorExit;
      (LPCTSTR *)lpszStrings, // array of error strings
      NULL);
                       // no raw data
                                                                                      catch (...)
    (VOID) DeregisterEventSource(hEventSource);
                                                                                                WriteMessageToEventLog(TEXT("Unhandled exception
                                                                           caught in DeliveryWorkerThread."));
                                                                                                goto ErrorExit;
/* FUNCTION: DeliveryWorkerThread
                                                                                      while (TRUE)
* PURPOSE:
                    This function processes deferred delivery txns. There are
                                                                                                try
typically several
                              threads running this routine. The number of
                                                                                                          //while delivery thread running, i.e. user has
threads is determined by an entry
                                                                           not requested termination
                              read from the registry. The thread waits for
                                                                                                          while (TRUE)
work by waiting on semaphore.
                              When a delivery txn is posted, the semaphore
                                                                                                                     // need to wait for multiple objects:
is released. After processing
                                                                           program exit or worker semaphore;
                                                                                                                     handles[0] = hDoneEvent;
                              the delivery txn, information is logged to
record the txn status and execution
                                                                                                                     handles[1] = hWorkerSemaphore;
                                                                                                                     index = WaitForMultipleObjects(
                              time
*/
                                                                           2, &handles[0], FALSE, INFINITE);
                                                                                                                     if (index == WAIT OBJECT 0)
                                                                                                                               goto ErrorExit;
/*static*/ void DeliveryWorkerThread(void *ptr)
          CTPCC BASE
                                         *pTxn = NULL;
                                                                                                                     ZeroMemory(&txnDeliRec,
                                                                           sizeof(txnDeliRec));
          DELIVERY_TRANSACTION
                                                   delivery;
                                                                                                                     txnDeliRec.TxnType =
          PDELIVERY_DATA
                                                                            TXN REC TYPE TPCC DELIV DEF;
pDeliveryData;
          TXN RECORD TPCC DELIV DEF
                                                   txnDeliRec;
                                                                                                                     // make a local copy of current
                                                                           entry from delivery buffer and increment buffer index
          DWORD
                                                             index;
          HANDLE
                                                             handles[2];
                                                                           EnterCriticalSection(&DelBuffCriticalSection);
                                                                                                                     delivery =
          SYSTEMTIME
                                                                            *(pDelBuff+dwDelBuffBusyIndex);
                                         trans end;
                                                             //delivery
transaction finished time
                                                                                                                     dwDelBuffFreeCount++;
                                                                                                                     dwDelBuffBusyIndex++;
          SYSTEMTIME
                                         trans start;//delivery transaction
start time
                                                                                                                     if (dwDelBuffBusyIndex ==
                                                                           dwDelBuffSize)
                                                                                                // wrap-around if at end of buffer
          assert(txnDelilog != NULL);
                                                                                                                               dwDelBuffBusyIndex =
                                                                           0;
          try
                    if (Reg.eDB Protocol == ODBC)
                                                                           LeaveCriticalSection(&DelBuffCriticalSection);
```

```
pDeliveryData->w id =
                                                                               * RETURNS:
                                                                                                              BOOL
                                                                                                                        FALSE
                                                                                                                                   delivery information
delivery.w_id;
                                                                              posted successfully
                                                                                                                                              TRUE
                                          pDeliveryData->o carrier id =
delivery.o_carrier_id;
                                                                              error cannot post delivery info
                                          txnDeliRec.w id =
pDeliveryData->w id;
                                                                              BOOL PostDeliveryInfo(short w id, short o carrier id)
                                          txnDeliRec.o carrier id =
pDeliveryData->o carrier id;
                                                                                         BOOL bError;
                                          txnDeliRec.TxnStartT0 =
Get64BitTime(&delivery.queue);
                                                                                         EnterCriticalSection(&DelBuffCriticalSection);
                                                                                         if (dwDelBuffFreeCount > 0)
                                          GetLocalTime( &trans start );
                                                                                                   bError = FALSE;
                                          pTxn->Delivery();
                                          GetLocalTime( &trans_end );
                                                                                                   (pDelBuff+dwDelBuffFreeIndex)->w_id
                                                                              = w_id;
                                          //log txn
                                                                                                   (pDelBuff+dwDelBuffFreeIndex)->o carrier id
                                          txnDeliRec.TxnStatus =
                                                                              o_carrier_id;
ERR_SUCCESS;
                                          for (int i=0; i<10; i++)
                                                                              GetLocalTime(&(pDelBuff+dwDelBuffFreeIndex)->queue);
                                                     txnDeliRec.o_id[i] =
                                                                                                   dwDelBuffFreeCount--;
pDeliveryData->o id[i];
                                          txnDeliRec.DeltaT4 =
                                                                                                   dwDelBuffFreeIndex++;
(int)(Get64BitTime(&trans_end) - txnDeliRec.TxnStartT0);
                                                                                                   if (dwDelBuffFreeIndex == dwDelBuffSize)
                                          txnDeliRec.DeltaTxnExec =
                                                                                                              dwDelBuffFreeIndex = 0;
                                                                                                                                                         //
                                                                              wrap-around if at end of buffer
(int)(Get64BitTime(&trans_end) - Get64BitTime(&trans_start));
                                          if (txnDelilog != NULL)
                                                                                        else
                                                                                                   // No free buffers. Return an error, which indicates that
txnDelilog->WriteToLog(&txnDeliRec);
                                                                              the delivery buffer is full.
                                                                                                   // Most likely, the number of delivery worker threads
                                                                              needs to be increased to keep up
                     catch (CBaseErr *e)
                                                                                                   // with the txn rate.
                                                                                                   bError = TRUE;
                                                                                         LeaveCriticalSection(&DelBuffCriticalSection);
                               char szTmp[1024];
                               wsprintf( szTmp, "Error in Delivery Txn
                                                                                         if (!bError)
thread. %s", e->ErrorText());
                               WriteMessageToEventLog( szTmp );
                                                                                                   // increment worker semaphore to wake up a worker
                                                                              thread
                               // log the error txn
                                                                                                   ReleaseSemaphore( hWorkerSemaphore, 1, NULL );
                               txnDeliRec.TxnStatus = e->ErrorType();
                               if (txnDelilog != NULL)
                                                                                         return bError;
txnDelilog->WriteToLog(&txnDeliRec);
                                                                              /* FUNCTION: ProcessQueryString
                               delete e;
                                                                               * PURPOSE:
                                                                                                   This function extracts the relevent information out of the
                     catch (...)
                                                                              http command passed in from
                                                                                                              the browser
                               // unhandled exception; shouldn't happen; not
                                                                               * COMMENTS:
much we can do ...
                                                                                                   If this is the initial connection i.e. client is at welcome
                                                                              screen then
WriteMessageToEventLog(TEXT("Unhandled exception caught in
                                                                                                                         there will not be a terminal id or
DeliveryWorkerThread."));
                                                                              current form id. If this is the case
                                                                                                                         then the pTermid and pFormid
                                                                              return values are undefined.
ErrorExit:
                                                                              void ProcessQueryString(EXTENSION CONTROL BLOCK *pECB, int
          delete pTxn;
          _endthread();
                                                                              *pCmd, int *pFormId, int *pTermId, int *pSyncId)
                                                                                         char *ptr = pECB->lpszQueryString;
/* FUNCTION: PostDeliveryInfo
                                                                                         char szBuffer[25];
* PURPOSE:
                     This function enters the delivery txn into the deferred
delivery buffer.
                                                                                         //allowable client command strings i.e. CMD=command
                                                                                         static char *szCmds[] =
```

```
"<INPUT
                    "Process", "..NewOrder..", "..Payment..", "..Delivery..",
"..Order-Status..", "..Stock-Level..",
                                                                        TYPE=\"hidden\" NAME=\"FORMID\" VALUE=\"1\">"
                    "..Exit..", "Submit", "Menu", "Clear", "Stats", ""
                                                                                                                                    "<INPUT
                                                                        TYPE=\"hidden\" NAME=\"TERMID\" VALUE=\"0\">"
          };
                                                                                                                                   "<INPUT
          *pCmd
                                       // default is the login screen
                                                                        TYPE=\"hidden\" NAME=\"SYNCID\" VALUE=\"0\">"
                                                                                                                                   "<INPUT
          *pTermId = 0;
                                                                        TYPE=\"hidden\" NAME=\"VERSION\" VALUE=\""
                                                                        WEBCLIENT_VERSION "\">"
          // if no params (i.e., empty query string), then return login screen
          if (strlen(pECB->lpszQueryString) == 0)
                   return;
                                                                                  sprintf( szTmp,
                                                                                                      "Configuration Settings: <BR><font
          // parse FORMID, TERMID, and SYNCID
                                                                        face=\"Courier New\" color=\"blue\"><PRE>"
          *pFormId = GetIntKeyValue(&ptr, "FORMID", NO_ERR,
                                                                                                                          "Txn Monitor
                                                                        <B>%s</B><BR>"
NO_ERR);
          *pTermId = GetIntKeyValue(&ptr, "TERMID", NO ERR,
                                                                                                                         "Database protocol
NO_ERR);
                                                                        = <B>%s</B><BR>"
          *pSyncId = GetIntKeyValue(&ptr, "SYNCID", NO_ERR,
                                                                                                                         "Max Connections
NO_ERR);
                                                                        = <B>%d</B><BR>"
                                                                                                                         "# of Delivery Threads
          // parse CMD
                                                                        = <B>%d</B><BR>"
          GetKeyValue(&ptr, "CMD", szBuffer, sizeof(szBuffer),
                                                                                                                         "Max Pending
ERR_COMMAND_UNDEFINED);
                                                                        Deliveries = <B>\%d</B><BR>"
                                                                                                      , szTxnMonNames[Reg.eTxnMon],
          // see which command it matches
                                                                        szDBNames[Reg.eDB_Protocol],
          for(i=0;; i++)
                                                                                                      Reg.dwMaxConnections,
                                                                        dwNumDeliveryThreads, dwDelBuffSize );
          {
                   if (szCmds[i][0] == 0)
                                                                                  strcat( szBuffer, szTmp);
                             // no more; no match; return error
                                                                                  if(Reg.eTxnMon == COM)
                             throw new CWEBCLNT ERR(
ERR COMMAND UNDEFINED);
                   if ( !strcmp(szCmds[i], szBuffer) )
                                                                                            sprintf( szTmp,
                                                                                                                "COM Single Pool
                                                                        <B>%s</B><BR>"
                              *pCmd = i+1;
                                                                                                      Reg.bCOM SinglePool? "YES": "NO");
                             break;
                                                                                            strcat( szBuffer, szTmp);
                                                                                  strcat( szBuffer, "</PRE></font>");
                                                                                  if(Reg.eTxnMon == None)
/* FUNCTION: void WelcomeForm
                                                                                            // connection options may be specified when not using a
                                                                        txn monitor
                                                                                                                "Please enter your database options
                                                                                            sprintf( szTmp,
                                                                        for this connection: <BR>"
void WelcomeForm(EXTENSION CONTROL BLOCK *pECB, char
                                                                                                                                   "<font
*szBuffer)
                                                                        face=\"Courier New\" color=\"blue\"><PRE>"
                                                                                                                                   "DB Server
          char szTmp[1024];
                                                                         = <INPUT NAME=\"db server\" SIZE=20 VALUE=\"%s\"><BR>'
                                                                                                                                   "DB User
                                                                        ID = <INPUT NAME=\"db_user\" SIZE=20 VALUE=\"%s\"><BR>
          //welcome to tpc-c html form buffer, this is first form client sees.
          strcpy( szBuffer,
                             "<HTML><HEAD><TITLE>TPC-C Web
                                                                                                                                    "DB
Client</TITLE></HEAD><BODY>"
                                                                        Password = <INPUT NAME=\"db_passwd\" SIZE=20
                                                                         VALUE=\"%s\"><BR>"
"<B><BIG>Microsoft TPC-C Web Client (ver 4.20)</BIG></B> <BR> <BR>'
                                                                                                                                   "DB Name
                                                            '<font
                                                                         = <INPUT NAME=\"db name\" SIZE=20 VALUE=\"%s\"><BR>'
face=\"Courier New\"><PRE>"
                                                           "Compiled:
                                                                         "</PRE></font>"
" DATE ", " TIME " <BR>"
                                                                                                                , Reg.szDbServer, Reg.szDbUser,
                                                           "Source:
                                                                        Reg.szDbPassword, Reg.szDbName);
  FILE "(" TIMESTAMP ") <BR>"
                                                                                  else
                                                                                            // if using a txn monitor, connection options are
"</PRE></font>"
                                                                        determined from registry; can't
                                                           "<FORM
                                                                                            // set per user. show options fyi
ACTION=\"tpcc.dll\" METHOD=\"GET\">"
                                                                                                                "Database options which will be
                                                                                            sprintf( szTmp,
                                                           "<INPUT
                                                                        used by the transaction monitor: <BR>"
TYPE=\"hidden\" NAME=\"STATUSID\" VALUE=\"0\">"
                                                                                                                                    "<font
                                                           "<INPUT
                                                                        face=\"Courier New\" color=\"blue\"><PRE>"
TYPE=\"hidden\" NAME=\"ERROR\" VALUE=\"0\">"
                                                                                                                                   "DB Server
                                                                              = <B>%s</B><BR>"
```

```
"DB User
                                                                                             GetKeyValue(&ptr, "db name", szDatabase,
ID
         =<B>%s</B><BR>"
                                                                         sizeof(szDatabase), NO ERR);
                                                            "DB
Password
               = <B>%s</B><BR>"
                                                            "DB Name
                                                                                   // parse warehouse ID
      = <B>%S</B><BR>"
                                                                                   int w id = GetIntKeyValue(&ptr, "w id",
                                                                         ERR_HTML_ILL_FORMED, ERR_W_ID_INVALID);
"</PRE></font>"
                                                                                   if (w_id < 1)
                                                                                             throw new CWEBCLNT ERR( ERR W ID INVALID
                                        , Reg.szDbServer, Reg.szDbUser,
Reg.szDbPassword, Reg.szDbName);
                                                                         );
         strcat( szBuffer, szTmp);
                                                                                   // parse district ID
                                                                                   int d id = GetIntKeyValue(&ptr, "d id",
         sprintf( szTmp,
                              "Please enter your Warehouse and District for
                                                                         ERR_HTML_ILL_FORMED, ERR_D_ID_INVALID);
this session: <BR>'
                                                                                   if (d_id < 1 || d_id > 10)
                                                 "<font face=\"Courier
                                                                                             throw new CWEBCLNT ERR( ERR D ID INVALID
New\" color=\"blue\"><PRE>" );
         strcat( szBuffer, szTmp);
         strcat( szBuffer,
                              "Warehouse ID = <INPUT NAME=\"w_id\"
SIZE=4><BR>"
                                                            "District ID
                                                                                   iNewTerm = TermAdd();
= <INPUT NAME=\"d_id\" SIZE=2><BR>"
                                                                                   Term.pClientData[iNewTerm].w id = w id;
"</PRE></font><HR>"
                                                                                   Term.pClientData[iNewTerm].d id = d id;
                                                            "<INPUT
TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Submit\">"
                                                                                   try
                                                                                   {
"</FORM></BODY></HTML>");
                                                                                             if(Reg.eTxnMon == TUXEDO)
                                                                                                       Term.pClientData[iNewTerm].pTxn =
                                                                         pCTPCC TUXEDO new();
                                                                                             else if (Reg.eTxnMon == ENCINA)
/* FUNCTION: SubmitCmd
                                                                                                       Term.pClientData[iNewTerm].pTxn =
* PURPOSE:
                   This function allocated a new terminal id in the Term
                                                                         pCTPCC_ENCINA_new();
                                                                                             else if (Reg.eTxnMon == COM)
structure array.
                                                                                                       Term.pClientData[iNewTerm].pTxn =
                                                                         pCTPCC_COM_new( Reg.bCOM_SinglePool );
                                                                                             else if (Reg.eDB_Protocol == ODBC)
                                                                                                       \overline{\text{Term.pClientData[iNewTerm].pTxn}} =
void SubmitCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
                                                                         pCTPCC ODBC new( szServer, szUser, szPassword, szMyComputerName,
                             iNewTerm;
                                                                         szDatabase);
          int
                    *ptr = pECB->lpszQueryString;
                                                                                             else if (Reg.eDB Protocol == DBLIB)
         char
                                                                                                       Term.pClientData[iNewTerm].pTxn =
         char
                                       = \{ 0 \};
                                                                         pCTPCC_DBLIB_new( szServer, szUser, szPassword, szMyComputerName,
                   szVersion[32]
                   szServer[32]
                                        = \{ 0 \};
                                                                         szDatabase);
         char
                                       = "sa";
          char
                    szUser[32]
          char
                    szPassword[32]
                                       = \{ 0 \};
                                                                                   catch (...)
                   szDatabase[32]
          char
                                       = "tpcc";
                                                                                             TermDelete(iNewTerm);
         // validate version field; the version field ensures that the RTE is
                                                                                             throw:
                                                                                                                // pass exception upward
synchronized with the web client
         GetKeyValue(&ptr, "VERSION", szVersion, sizeof(szVersion),
ERR VERSION_MISMATCH);
                                                                                   MakeMainMenuForm(iNewTerm,
         if (stremp(szVersion, WEBCLIENT VERSION))
                                                                         Term.pClientData[iNewTerm].iSyncId, szBuffer);
                    throw new CWEBCLNT_ERR(
ERR VERSION MISMATCH);
                                                                         /* FUNCTION: StatsCmd
          if(Reg.eTxnMon == None)
                                                                         * PURPOSE:
                                                                                             This function returns to the browser the total number of
                   // parse Server name
                                                                         active terminal ids.
                   GetKeyValue(&ptr, "db server", szServer,
                                                                                                       This routine is for development/debugging
sizeof(szServer), ERR_NO_SERVER_SPECIFIED);
                                                                         purposes.
                    // parse User name
                   GetKeyValue(&ptr, "db_user", szUser, sizeof(szUser),
NO_ERR);
                                                                         void StatsCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
                   // parse Password
                   GetKeyValue(&ptr, "db_passwd", szPassword,
sizeof(szPassword), NO ERR);
                                                                                   int i;
                   // parse Database name
                                                                                   int
                                                                                             iTotal;
```

```
EnterCriticalSection(&TermCriticalSection);
         iTotal = 0;
         for(i=0; i<Term.iNumEntries; i++)
                   if (Term.pClientData[i].iNextFree == -1)
                            iTotal++;
         LeaveCriticalSection(&TermCriticalSection);
         wsprintf( szBuffer,
                            "<HTML><HEAD><TITLE>TPC-C Web
Client Stats</TITLE></HEAD>"
                            "<BODY><B><BIG> Total Active
Connections: %d </BIG></B><BR></BODY></HTML>"
                            , iTotal);
char *CWEBCLNT ERR::ErrorText()
         static SERRORMSG errorMsgs[] =
                            ERR COMMAND UNDEFINED,
                            "Command undefined."
         },
                            ERR D ID INVALID,
                            "Invalid District ID Must be 1 to 10."
                            ERR DELIVERY CARRIER ID RANGE,
         "Delivery Carrier ID out of range must be 1 - 10."
                            ERR DELIVERY CARRIER INVALID,
         "Delivery Carrier ID invalid must be numeric 1 - 10."
         },
                            ERR_DELIVERY_MISSING_OCD_KEY,
         "Delivery missing Carrier ID key \"OCD*\"."
                            ERR_DELIVERY_THREAD_FAILED,
                   "Could not start delivery worker thread."
                            ERR GETPROCADDR FAILED,
                            "Could not map proc in DLL. GetProcAddr
error. DLL="
                            ERR_HTML_ILL_FORMED,
                   "Required key field is missing from HTML string."
                            ERR_INVALID_SYNC_CONNECTION,
         "Invalid Terminal Sync ID."
                            ERR INVALID TERMID,
                            "Invalid Terminal ID."
         },
                            ERR LOADDLL FAILED,
                            "Load of DLL failed. DLL="
},
                            ERR_MAX_CONNECTIONS_EXCEEDED,
                   "No connections available. Max Connections is probably
too low." },
                            ERR MISSING REGISTRY ENTRIES,
         "Required registry entries are missing. Rerun INSTALL to correct."
ERR_NEWORDER_CUSTOMER_INVALID,
```

```
"New Order customer id invalid data type, range = 1 to 3000."
                           ERR NEWORDER CUSTOMER KEY.
                  "New Order missing Customer key \"CID*\"."
                           ERR NEWORDER DISTRICT INVALID,
         "New Order District ID Invalid range 1 - 10."
                           ERR_NEWORDER_FORM_MISSING_DID,
                  "New Order missing District key \"DID*\"."
                           ERR NEWORDER ITEMID INVALID,
         "New Order Item Id is wrong data type, must be numeric."
                           ERR NEWORDER ITEMID RANGE,
                  "New Order Item Id is out of range. Range = 1 to
999999."
ERR_NEWORDER_ITEMID_WITHOUT_SUPPW,
                                                        "New Order
Item_Id field entered without a corresponding Supp_W."
                           ERR_NEWORDER_MISSING_IID_KEY,
         "New Order missing Item Id key \"IID*\"."
                           ERR NEWORDER MISSING QTY KEY,
                  "New Order Missing Qty key \"Qty##*\"."
ERR_NEWORDER_MISSING_SUPPW_KEY,
"New Order missing Supp_W key \"SP##*\"."
                           ERR NEWORDER NOITEMS ENTERED,
                  "New Order No order lines entered."
                           ERR NEWORDER QTY INVALID,
                  "New Order Qty invalid must be numeric range 1 - 99."
                           ERR_NEWORDER_QTY_RANGE,
                           "New Order Qty is out of range. Range = 1 to
99 "
ERR NEWORDER OTY WITHOUT SUPPW,
"New Order Qty field entered without a corresponding Supp_W."
                           ERR NEWORDER SUPPW INVALID.
                   "New Order Supp W invalid data type must be numeric."
                           ERR NO SERVER SPECIFIED.
                  "No Server name specified."
                           ERR_ORDERSTATUS_CID_AND_CLT,
         "Order Status Only Customer ID or Last Name may be entered, not
both."
                           ERR ORDERSTATUS CID INVALID,
         "Order Status Customer ID invalid, range must be numeric 1 -
3000."
                           ERR ORDERSTATUS CLT RANGE,
                  "Order Status Customer last name longer than 16
characters."
                           ERR_ORDERSTATUS_DID_INVALID,
         "Order Status District invalid, value must be numeric 1 - 10."
ERR_ORDERSTATUS_MISSING_CID_CLT,
                                                        "Order
Status Either Customer ID or Last Name must be entered."
ERR ORDERSTATUS MISSING CID KEY,
                                                       "Order
```

```
Status missing Customer key \"CID*\"."
         },
ERR ORDERSTATUS MISSING CLT KEY,
                                                        "Order
Status missing Customer Last Name key \"CLT*\"."
ERR ORDERSTATUS MISSING DID KEY,
                                                        "Order
Status missing District key \"DID*\"."
         },
                            ERR PAYMENT CDI INVALID,
                   "Payment Customer district invalid must be numeric."
                            ERR PAYMENT CID AND CLT,
                   "Payment Only Customer ID or Last Name may be
entered, not both."
                            ERR PAYMENT CUSTOMER INVALID,
                   "Payment Customer data type invalid, must be numeric."
                            ERR PAYMENT CWI INVALID,
                   "Payment Customer Warehouse invalid, must be
numeric."
                            ERR PAYMENT DISTRICT INVALID,
         "Payment District ID is invalid, must be 1 - 10."
                            ERR PAYMENT HAM INVALID,
                   "Payment Amount invalid data type must be numeric."
                            ERR PAYMENT HAM RANGE,
                            "Payment Amount out of range, 0 - 9999.99."
                                                        },
ERR PAYMENT LAST NAME TO LONG,
"Payment Customer last name longer than 16 characters."
                            ERR PAYMENT MISSING CDI KEY,
         "Payment missing Customer district key \"CDI*\"."
                            ERR_PAYMENT_MISSING_CID_CLT,
         "Payment Either Customer ID or Last Name must be entered."
                            ERR_PAYMENT_MISSING_CID_KEY,
         "Payment missing Customer Key\"CID*\"."
                            ERR PAYMENT MISSING CLT KEY,
         "Payment missing Customer Last Name key \"CLT*\"."
                   }.
                            ERR PAYMENT MISSING CWI KEY,
         "Payment missing Customer Warehouse key \"CWI*\"."
                  }.
                            ERR_PAYMENT_MISSING_DID_KEY,
         "Payment missing District Key \"DID*\"."
                            ERR PAYMENT MISSING HAM KEY,
         "Payment missing Amount key \"HAM*\"."
ERR_STOCKLEVEL_MISSING_THRESHOLD_KEY,
                                                        "Stock
Level; missing Threshold key \"TT*\"."
ERR STOCKLEVEL THRESHOLD INVALID,
                                                        "Stock
Level; Threshold value must be in the range = 1 - 99."
                                                        },
ERR STOCKLEVEL_THRESHOLD_RANGE,
"Stock Level Threshold out of range, range must be 1 - 99."
},
```

```
ERR VERSION MISMATCH,
                     "Invalid version field. RTE and Web Client are probably
out of sync." },
                               ERR_W_ID_INVALID,
                               "Invalid Warehouse ID."
          },
                                                               }
          };
          char szTmp[256];
          int i = 0;
          while (TRUE)
                     if(errorMsgs[i].szMsg[0] == 0)
                               strcpy( szTmp, "Unknown error number." );
                               break:
                    if (m Error == errorMsgs[i].iError)
                               strcpy( szTmp, errorMsgs[i].szMsg );
                               break:
                    i++*
          if (m szTextDetail)
                     strcat( szTmp, m_szTextDetail );
          if (m_SystemErr)
                     wsprintf( szTmp+strlen(szTmp), " Error=%d",
m_SystemErr);
          m_szErrorText = new char[strlen(szTmp)+1];
          strcpy( m szErrorText, szTmp);
          return m_szErrorText;
/* FUNCTION: GetKeyValue
* PURPOSE:
                    This function parses a http formatted string for specific
key values.
* ARGUMENTS:
                                                    *pQueryString
http string from client browser
                                         char
                               key value to look for
*pKey
                                          char
*pValue
                               character array into which to place key's value
                                         int
                               maximum length of key value array.
iMax
                                          WEBERROR
                                         error value to throw
err
* RETURNS:
                               nothing.
* ERROR:
                               if (the pKey value is not found) then
                                                    if (err == 0)
                                                               return
(empty string)
                                                    else
                                                               throw
CWEBCLNT_ERR(err)
```

```
* COMMENTS:
                     http keys are formatted either KEY=value& or
                                                                              * COMMENTS:
                                                                                                  http keys are formatted either KEY=value& or
KEY=value\setminus 0. This DLL formats
                                                                             KEY=value\0. This DLL formats
                                          TPC-C input fields in such a
                                                                                                                       TPC-C input fields in such a
manner that the keys can be extracted in the
                                                                             manner that the keys can be extracted in the
                                                                                                                       above manner
                                          above manner
void GetKeyValue(char **pQueryString, char *pKey, char *pValue, int iMax,
                                                                             int GetIntKeyValue(char **pQueryString, char *pKey, WEBERROR
WEBERROR err)
                                                                             NoKeyErr, WEBERROR NotIntErr)
          char *ptr;
                                                                                       char *ptr0;
                                                                                       char *ptr;
          if (!(ptr=strstr(*pQueryString, pKey)))
                     goto ErrorExit;
                                                                                       if ( !(ptr=strstr(*pQueryString, pKey)) )
          ptr += strlen(pKey);
                                                                                                  goto ErrorNoKey;
          if (*ptr!='=')
                                                                                       ptr += strlen(pKey);
                     goto ErrorExit;
                                                                                       if (*ptr!='=')
          ptr++;
                                                                                                  goto ErrorNoKey;
                                                                                       ptr++;
          iMax--; // one position is for terminating null
          while( *ptr && *ptr != '&' && iMax)
                                                                                                            // remember starting point
                                                                                       ptr0 = ptr;
                                                                                       // scan string until a terminator (null or &) or a non-digit
                     *pValue++ = *ptr++;
                                                                                       while( *ptr && *ptr != '&' && isdigit(*ptr) )
                     iMax--;
                                                                                                  ptr++;
          *pValue = 0; // terminating null
                                                                                       // make sure we stopped scanning for the right reason
                                                                                       if ((ptr0 == ptr) || (*ptr && *ptr != '&'))
          *pQueryString = ptr;
          return;
                                                                                                  if (NotIntErr != NO ERR)
                                                                                                             throw new CWEBCLNT_ERR( NoKeyErr );
ErrorExit:
                                                                                                  return 0;
          if (err != NO_ERR)
                     throw new CWEBCLNT ERR( err );
          *pValue = 0; // return empty result string
                                                                                        *pQueryString = ptr;
                                                                                       return atoi(ptr0);
/* FUNCTION: GetIntKeyValue
                                                                             ErrorNoKey:
                                                                                       if (NoKeyErr != NO ERR)
* PURPOSE:
                     This function parses a http formatted string for a specific
                                                                                                  throw new CWEBCLNT ERR( NoKeyErr );
key value.
                                                                                       return 0;
* ARGUMENTS:
                                                    *pQueryString
http string from client browser
                                                                             /* FUNCTION: TermInit
                                          char
                               key value to look for
*pKey
                                                                              * PURPOSE:
                                                                                                  This function initializes the client terminal structure; it is
                                          WEBERROR
                                                                             called when the TPCC.DLL
NoKeyErr
                     error value to throw if key not found
                                                                                                             is first loaded by the inet service.
                                          WEBERROR
NotIntErr
                     error value to throw if value not numeric
                                                                              */
* RETURNS:
                               integer
                                                                             void TermInit(void)
* ERROR:
                               if (the pKey value is not found) then
                                                                                       EnterCriticalSection(&TermCriticalSection);
                                                    if (NoKeyErr !=
NO_ERR)
                                                                                       Term.iMasterSyncId = 1;
                                                               throw
                                                                                       Term.iNumEntries = Reg.dwMaxConnections+1;
CWEBCLNT ERR(err)
                                                    else
                                                                                       Term.pClientData
                                                                                                            = NULL;
                                                               return 0
                                                                                       Term.pClientData
                                          else if (non-numeric char found)
                                                                             (PCLIENTDATA)malloc(Term.iNumEntries * sizeof(CLIENTDATA));
then
                                                                                       if (Term.pClientData == NULL)
                                                    if (NotIntErr !=
NO ERR) then
                                                                                                  LeaveCriticalSection(&TermCriticalSection);
                                                               throw
                                                                                                  throw new CWEBCLNT ERR(
CWEBCLNT_ERR(err)
                                                                             ERR_MEM_ALLOC_FAILED );
                                                    else
                                                               return 0
```

```
ZeroMemory( Term.pClientData, Term.iNumEntries *
                                                                                         {
sizeof(CLIENTDATA));
          Term.iFreeList
                                           = Term.iNumEntries-1;
          // build free list
          // note: Term.pClientData[0].iNextFree gets set to -1, which marks it
as "in use"
                This is intentional, as the zero entry is used as an anchor and
never
                                allocated as an actual terminal.
          for(int i=0; i<Term.iNumEntries; i++)
                     Term.pClientData[i].iNextFree = i-1;
          LeaveCriticalSection(&TermCriticalSection);
/* FUNCTION: TermDeleteAll
* PURPOSE:
                     This function frees allocated resources associated with
the terminal structure.
* ARGUMENTS:
* RETURNS:
                                None
* COMMENTS:
                     This function is called only when the inet service unloads
the TPCC.DLL
                                                                              to requestor.
*/
void TermDeleteAll(void)
          EnterCriticalSection(&TermCriticalSection);
          for(int i=1; i<Term.iNumEntries; i++)
                     if (Term.pClientData[i].iNextFree == -1)
                                delete Term.pClientData[i].pTxn;
          Term.iFreeList
                                           = 0;
          Term.iNumEntries
          if ( Term.pClientData )
                     free(Term.pClientData);
                                = NULL;
          Term.pClientData
          LeaveCriticalSection(&TermCriticalSection);
/* FUNCTION: TermAdd
                                                                              id
* PURPOSE:
                     This function assigns a terminal id which is used to
identify a client browser.
* RETURNS:
                                int
                                                     assigned terminal id
int TermAdd(void)
          DWORD i;
                                iNewTerm, iTickCount;
          if (Term.iNumEntries == 0)
                     return -1;
          EnterCriticalSection(&TermCriticalSection);
          if (Term.iFreeList != 0)
```

```
// position is available
                     iNewTerm = Term.iFreeList;
                     Term.iFreeList =
Term.pClientData[iNewTerm].iNextFree;
                     Term.pClientData[iNewTerm].iNextFree = -1; //
indicates this position is in use
          else
                     // no open slots, so find the slot that hasn't been used in
the longest time and reuse it
                     for(iNewTerm=1, i=1, iTickCount=0x7FFFFFFF;
i<Reg.dwMaxConnections; i++)
                               if (iTickCount >
Term.pClientData[i].iTickCount)
                                          iTickCount =
Term.pClientData[i].iTickCount;
                                          iNewTerm = i;
                     // if oldest term is less than one minute old, it probably
means that more connections
                     // are being attempted than were specified as "Max
Connections" at install. In this case,
                     // do not bump existing connection; instead, return error
                     if ((GetTickCount() - iTickCount) < 60000)
                               LeaveCriticalSection(&TermCriticalSection);
                               throw new CWEBCLNT ERR(
ERR_MAX_CONNECTIONS_EXCEEDED );
          Term.pClientData[iNewTerm].iTickCount = GetTickCount();
          Term.pClientData[iNewTerm].iSyncId = Term.iMasterSyncId++;
          Term.pClientData[iNewTerm].pTxn = NULL;
          LeaveCriticalSection(&TermCriticalSection);
          return iNewTerm;
/* FUNCTION: TermDelete
* PURPOSE:
                     This function makes a terminal entry in the Term array
available for reuse.
* ARGUMENTS:
                     int
                     Terminal id of client exiting
void TermDelete(int id)
          if (id > 0 && id < Term.iNumEntries)
                     delete Term.pClientData[id].pTxn;
                     // put onto free list
                     EnterCriticalSection(&TermCriticalSection);
                     Term.pClientData[id].iNextFree = Term.iFreeList;
                     Term.iFreeList = id;
                     LeaveCriticalSection(&TermCriticalSection);
```

```
"<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                    VALUE=\"..Order-Status..\">
/* FUNCTION: MakeErrorForm
                                                                                       '<INPUT TYPE=\"submit\" NAME=\"CMD\"</pre>
                                                                    VALUE=\"..Stock-Level..\">"
                                                                                       "<INPUT TYPE=\"submit\" NAME=\"CMD\"
void ErrorForm(EXTENSION CONTROL BLOCK *pECB, int iType, int
                                                                    VALUE=\"..Exit..\">"
                                                                                      "</FORM></BODY></HTML>"
iErrorNum, int iTermId, int iSyncId, char *szErrorText, char *szBuffer)
                                                                                      , MAIN MENU FORM, iTermId, iSyncId);
         wsprintf(szBuffer,
                  "<HTML><HEAD><TITLE>TPC-C
Error</TITLE></HEAD><BODY>"
                                                                    /* FUNCTION: MakeStockLevelForm
                  "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
                  "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\"
                                                                    * PURPOSE:
                                                                                      This function constructs the Stock Level HTML page.
VALUE=\"%d\">"
                  "<INPUT TYPE=\"hidden\" NAME=\"ERROR\"
                                                                                      The internal client buffer is created when the terminal id
                                                                    * COMMENTS:
VALUE=\"%d\">"
                                                                    is assigned and should not
                  "<INPUT TYPE=\"hidden\" NAME=\"FORMID\"
                                                                                                         be freed except when the client
VALUE=\"\%d\">"
                                                                    terminal id is no longer needed.
                  "<INPUT TYPE=\"hidden\" NAME=\"TERMID\"
VALUE=\"%d\">"
                  "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\"
                                                                    void MakeStockLevelForm(int iTermId, STOCK LEVEL DATA
VALUE=\"\%d\">"
                                                                    *pStockLevelData, BOOL bInput, char *szForm)
                  "<BOLD>An Error Occurred</BOLD><BR><BR>"
                                                                             int
                                                                                      c:
                  "<BR><BR><HR>"
                  "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                             c = wsprintf(szForm,
VALUE=\"..NewOrder..\">"
                                                                                      "<HTML><HEAD><TITLE>TPC-C Stock
                  "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                    Level</TITLE></HEAD><FORM ACTION=\"tpcc.dll\"
VALUE=\"..Payment..\">"
                                                                    METHOD=\"GET\">"
                   "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                      "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\"
                                                                    VALUE=\"0\">"
VALUE=\"..Delivery..\">"
                  "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                      "<INPUT TYPE=\"hidden\" NAME=\"ERROR\"
VALUE=\"..Order-Status..\">"
                                                                    VALUE=\"0\">"
                  "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                      "<INPUT TYPE=\"hidden\" NAME=\"FORMID\"
VALUE=\"..Stock-Level..\">
                                                                    VALUE=\"%d\">"
                   "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                      "<INPUT TYPE=\"hidden\" NAME=\"TERMID\"
VALUE=\"..Exit..\">'
                                                                    VALUE=\"%d\">"
                  "</FORM></BODY></HTML>"
                                                                                      "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\"
                  , iType, iErrorNum, MAIN_MENU_FORM, iTermId,
                                                                    VALUE=\"%d\">"
                                                                                      "<PRE><font face=\"Courier\">
iSyncId, szErrorText );
                                                                    Stock-Level<BR>"
                                                                                      "Warehouse: %4.4d District: %2.2d BR > BR > ",
                                                                                      STOCK LEVEL FORM, iTermId,
/* FUNCTION: MakeMainMenuForm
                                                                    Term.pClientData[iTermId].iSyncId,
                                                                                      Term.pClientData[iTermId].w id,
                                                                    Term.pClientData[iTermId].d_id);
void MakeMainMenuForm(int iTermId, int iSyncId, char *szForm)
         wsprintf(szForm,
                                                                             if (bInput)
                  "<HTML><HEAD><TITLE>TPC-C Main
                                                                             {
Menu</TITLE></HEAD><BODY>'
                                                                                      strcpy(szForm+c,
                  "Select Desired Transaction.<BR><HR>"
                                                                                                "Stock Level Threshold: <INPUT
                  "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
                                                                    NAME=\"TT*\" SIZE=2><BR>
                                                                                               <BR>"
                  "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\"
                                                                                                "low stock: </font><BR> <BR> <BR>
VALUE=\"0\">"
                                                                    <BR> <BR> <BR> <BR> <BR> "
                  "<INPUT TYPE=\"hidden\" NAME=\"ERROR\"
                                                                                                " <BR> <BR> <BR> <BR> <BR>
VALUE=\"0\">"
                                                                    <BR></PRF><HR>"
                  "<INPUT TYPE=\"hidden\" NAME=\"FORMID\"
                                                                                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"%d\">"
                                                                    VALUE=\"Process\">"
                  "<INPUT TYPE=\"hidden\" NAME=\"TERMID\"
                                                                                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"%d\">"
                                                                    VALUE=\"Menu\">"
                  "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\"
                                                                                                "</FORM></HTML>");
VALUE=\"%d\">"
                  "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                             else
VALUE=\"..NewOrder..\">"
                  "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                      wsprintf(szForm+c,
VALUE=\"..Payment..\">"
                                                                                                "Stock Level Threshold: %2.2d BR > BR > "
                                                                                                "low stock: %3.3d</font> <BR> <BR> <BR>
                   "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Delivery..\">'
                                                                    <BR> <BR> <BR> <BR> <BR> "
```

```
" <BR> <BR> <BR> <BR> <BR>
                                                                                                                                                  "District: <INPUT NAME=\"DID*\"
                                                                                                       SIZE=1>
<BR> <BR></PRE><HR>"
                                                                                                                                      Date: <BR>"
                                          "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                                                                                  "Customer: <INPUT NAME=\"CID*\"
VALUE=\"..NewOrder..\">"
                                                                                                       SIZE=4> Name:
                                                                                                                                              Credit:
                                                                                                                                                         %Disc:<BR>"
                                          "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                                                                                  "Order Number:
                                                                                                                                                                               Number of Lines:
                                                                                                                        D_tax:<BR> <BR>"
VALUE=\"..Payment..\">"
                                                                                                        W tax:
                                                                                                                                                 " Supp_W Item_Id Item Name
                                          "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                                                                                                                                       Qty
VALUE=\"..Delivery..\">"
                                                                                                       Stock B/G Price Amount SR>
                                                                                                                                                  " <INPUT NAME=\"SP00*\" SIZE=4>
                                          "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Order-Status..\">"
                                                                                                        <INPUT NAME=\"IID00*\" SIZE=6>
                                                                                                                                                                              <INPUT
                                                                                                       NAME=\"Qty00*\" SIZE=1><BR>"
                                          "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                                                                                  " <INPUT NAME=\"SP01*\" SIZE=4>
VALUE=\" Stock-Level \">"
                                          "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                                        <INPUT NAME=\"IID01*\" SIZE=6>
                                                                                                                                                                              <INPUT
                                                                                                       NAME=\"Qty01*\" SIZE=1><BR>"
VALUE=\"..Exit..\">"
                                                                                                                                                  " <INPUT NAME=\"SP02*\" SIZE=4>
                                          "</FORM></HTML>"
                                          , pStockLevelData->threshold,
                                                                                                        <INPUT NAME=\"IID02*\" SIZE=6>
                                                                                                                                                                              <INPUT
                                                                                                       NAME=\"Qty02*\" SIZE=1><BR>"
pStockLevelData->low stock);
                                                                                                                                                  " <INPUT NAME=\"SP03*\" SIZE=4>
                                                                                                        <INPUT NAME=\"IID03*\" SIZE=6>
                                                                                                                                                                              <INPUT
                                                                                                       NAME=\"Qty03*\" SIZE=1><BR>"
                                                                                                                                                  " <INPUT NAME=\"SP04*\" SIZE=4>
/* FUNCTION: MakeNewOrderForm
                                                                                                        <INPUT NAME=\"IID04*\" SIZE=6>
                                                                                                                                                                              <INPUT
                           The internal client buffer is created when the terminal id
* COMMENTS:
                                                                                                       NAME=\"Qty04*\" SIZE=1><BR>"
                                                                                                                                                  " <INPUT NAME=\"SP05*\" SIZE=4>
is assigned and should not
                                                        be freed except when the client
                                                                                                        <INPUT NAME=\"IID05*\" SIZE=6>
                                                                                                                                                                              <INPUT
                                                                                                       NAME=\"Qty05*\" SIZE=1><BR>"
terminal id is no longer needed.
                                                                                                                                                  " <INPUT NAME=\"SP06*\" SIZE=4>
                                                                                                        <INPUT NAME=\"IID06*\" SIZE=6>
                                                                                                                                                                              <INPUT
void MakeNewOrderForm(int iTermId, NEW ORDER DATA
                                                                                                       NAME=\"Qty06*\" SIZE=1><BR>"
*pNewOrderData, BOOL bInput, char *szForm)
                                                                                                                                                  " <INPUT NAME=\"SP07*\" SIZE=4>
                                                                                                        <INPUT NAME=\"IID07*\" SIZE=6>
                                                                                                                                                                              <INPUT
                                                                                                       NAME=\"Qty07*\" SIZE=1><BR>"
              int
              BOOL
                           bValid-
                                                                                                                                                  " <INPUT NAME=\"SP08*\" SIZE=4>
                            char szBR[] = " < BR > < BR 
              static
                                                                                                        <INPUT NAME=\"IID08*\" SIZE=6>
                                                                                                                                                                              <INPUT
<BR> <BR> <BR> <BR> <BR> <BR> :";
                                                                                                       NAME=\"Qty08*\" SIZE=1><BR>"
                                                                                                                                                  " <INPUT NAME=\"SP09*\" SIZE=4>
                                                                                                        <INPUT NAME=\"IID09*\" SIZE=6>
              if (!bInput)
                                                                                                                                                                              <INPUT
                                                                                                       NAME=\"Qty09*\" SIZE=1><BR>"
                           assert( pNewOrderData->exec status code == eOK ||
pNewOrderData->exec_status_code == eInvalidItem );
                                                                                                                                                  " <INPUT NAME=\"SP10*\" SIZE=4>
                                                                                                        <INPUT NAME=\"IID10*\" SIZE=6>
                                                                                                                                                                              <INPUT
              bValid = (bInput || (pNewOrderData->exec status code == eOK));
                                                                                                       NAME=\"Qty10*\" SIZE=1><BR>"
                                                                                                                                                  " <INPUT NAME=\"SP11*\" SIZE=4>
                                                                                                        <INPUT NAME=\"IID11*\" SIZE=6>
              c = wsprintf(szForm,
                                                                                                                                                                              <INPUT
                                                                                                       NAME=\"Qty11*\" SIZE=1><BR>"
                            "<HTML><HEAD><TITLE>TPC-C New
                                                                                                                                                  " <INPUT NAME=\"SP12*\" SIZE=4>
Order</TITLE></HEAD><BODY>'
                            "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
                                                                                                        <INPUT NAME=\"IID12*\" SIZE=6>
                                                                                                                                                                              <INPUT
                            "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\"
                                                                                                       NAME=\"Qty12*\" SIZE=1><BR>"
VALUE=\"%d\">"
                                                                                                                                                 " <INPUT NAME=\"SP13*\" SIZE=4>
                            "<INPUT TYPE=\"hidden\" NAME=\"ERROR\"
                                                                                                        <INPUT NAME=\"IID13*\" SIZE=6>
                                                                                                                                                                              <INPUT
VALUE=\"0\">"
                                                                                                        NAME=\"Qty13*\" SIZE=1><BR>"
                                                                                                                                                  " <INPUT NAME=\"SP14*\" SIZE=4>
                            "<INPUT TYPE=\"hidden\" NAME=\"FORMID\"
                                                                                                        <INPUT NAME=\"IID14*\" SIZE=6>
VALUE=\"%d\">"
                                                                                                                                                                              <INPUT
                                                                                                       NAME=\"Qty14*\" SIZE=1><BR>"
                            "<INPUT TYPE=\"hidden\" NAME=\"TERMID\"
VALUE=\"%d\">"
                                                                                                                                                  "Execution Status:
                                                                                                       Total:<BR>"
                            "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\"
VALUE=\"%d\">"
                                                                                                                                                  "</font></PRE><HR>"
                            "<PRE><font face=\"Courier\">
                                                                                                                                                  "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                                        VALUE=\"Process\">"
New Order < BR > "
                            , bValid?0:ERR BAD ITEM ID,
                                                                                                                                                  "<INPUT TYPE=\"submit\" NAME=\"CMD\"
NEW_ORDER_FORM, iTermId, Term.pClientData[iTermId].iSyncId);
                                                                                                        VALUE=\"Menu\">"
                                                                                                                                                  "</FORM></HTML>"
              if (bInput)
                                                                                                                                                  );
                            c += wsprintf(szForm+c, "Warehouse: %4.4d",
                                                                                                                     else
Term.pClientData[iTermId].w_id );
                                                                                                                                   c += wsprintf(szForm+c, "Warehouse: %4.4d District:
                           strcpy( szForm+c,
                                                                                                       %2.2d
                                                                                                                                  Date: ".
                                                                                                                                                  pNewOrderData->w id,
```

```
pNewOrderData->d id);
                   if (bValid)
                             c += wsprintf(szForm+c,
"%2.2d-%2.2d-%4.4d %2.2d:%2.2d:%2.2d",
                                       pNewOrderData->o entry d.day,
pNewOrderData->o_entry_d.month,
                                       pNewOrderData->o entry d.year,
                                       pNewOrderData->o_entry_d.hour,
pNewOrderData->o entry d.minute,
pNewOrderData->o_entry_d.second);
                   c += wsprintf(szForm+c, "<BR>Customer: %4.4d
Name: %-16s Credit: %-2s
                             pNewOrderData->c id,
pNewOrderData->c_last, pNewOrderData->c_credit);
                   if (bValid)
                             c += sprintf(szForm+c,
                                                           "%%Disc:
%5.2f
            <BR>"
                                                           "Order
Number: %8.8d Number of Lines: %2.2d
                                         W tax: %5.2f D tax: %5.2f
<RR> <RR>'
                                                           "Supp W
Item Id Item Name
                           Qty Stock B/G Price Amount SR>",
100.0*pNewOrderData->c discount,
                                       pNewOrderData->o_id,
                                       pNewOrderData->o ol cnt,
                                       100.0 * pNewOrderData->w_tax,
                                       100.0 * pNewOrderData->d tax);
                             for(i=0; i<pNewOrderData->o ol cnt; i++)
                                       c += sprintf(szForm+c, " %4.4d
%6.6d %-24s %2.2d %3.3d %1.1s $%6.2f $%7.2f <BR>",
pNewOrderData->OL[i].ol supply w id,
pNewOrderData->OL[i].ol i id,
pNewOrderData->OL[i].ol_i_name,
pNewOrderData->OL[i].ol_quantity,
pNewOrderData->OL[i].ol_stock,
pNewOrderData->OL[i].ol_brand_generic,
pNewOrderData->OL[i].ol i price,
pNewOrderData->OL[i].ol amount);
                   else
                    {
                             c += wsprintf(szForm+c,
                                       "%Disc:<BR>"
                                       "Order Number: %8.8d Number
of Lines:
                          D_tax:<BR> <BR>"
               W_tax:
```

```
"Supp_W Item_Id Item Name
     Qty Stock B/G Price Amount SR>
                                      , pNewOrderData->o id);
                            i = 0
                   strncpy( szForm+c, szBR, (15-i)*5 );
                   c += (15-i)*5;
                   if (bValid)
                            c += sprintf(szForm+c, "Execution Status:
Transaction committed.
                               Total: $%8.2f ",
                                      pNewOrderData->total_amount);
                   else
                            c += wsprintf(szForm+c, "Execution Status:
Item number is not valid.
                               Total:");
                   strcpy(szForm+c,
                             " <BR></font></PRE><HR>"
                             "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..NewOrder..\">"
                            "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Payment..\">"
                            "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Delivery..\">"
                            "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Order-Status..\">
                            "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Stock-Level..\">"
                            "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Exit..\">"
                            "</FORM></HTML>"
                            );
         }
/* FUNCTION: MakePaymentForm
* COMMENTS:
                   The internal client buffer is created when the terminal id
is assigned and should not
                                      be freed except when the client
terminal id is no longer needed.
void MakePaymentForm(int iTermId, PAYMENT_DATA *pPaymentData,
BOOL bInput, char *szForm)
         int c;
         c = wsprintf(szForm,
                   "<HTML><HEAD><TITLE>TPC-C
Payment</TITLE></HEAD><BODY>"
                   "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
                   "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\"
VALUE=\"0\">"
                   "<INPUT TYPE=\"hidden\" NAME=\"ERROR\"
VALUE=\"0\">"
                   "<INPUT TYPE=\"hidden\" NAME=\"FORMID\"
VALUE=\"%d\">"
                   "<INPUT TYPE=\"hidden\" NAME=\"TERMID\"
VALUE=\"%d\">"
                   "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\"
VALUE=\"%d\">"
                   "<PRE><font face=\"Courier\">
Payment<BR>"
                   "Date: "
```

```
, PAYMENT FORM, iTermId,
                                                                                                                                                                  , pPaymentData->c id,
Term.pClientData[iTermId].iSyncId);
                                                                                                                   pPaymentData->c w id,
                                                                                                                                                                  pPaymentData->c d id
                                                                                                                                                                  , pPaymentData->c first,
                if (!bInput)
                                                                                                                   pPaymentData->c_middle, pPaymentData->c_last
                                                                                                                                                                   , pPaymentData->c since.day,
                               c += wsprintf(szForm+c, "%2.2d-%2.2d-%4.4d
                                                                                                                   pPaymentData->c since.month, pPaymentData->c since.year
%2.2d:%2.2d:%2.2d"
                                                                                                                                                                  , pPaymentData->c street 1,
                                               pPaymentData->h date.day,
                                                                                                                   pPaymentData->c credit
                                               pPaymentData->h date.month,
                                                                                                                                                                  );
                                               pPaymentData->h date.year,
                                               pPaymentData->h_date.hour,
                                                                                                                          c += sprintf(szForm+c,
                                               pPaymentData->h_date.minute,
                                                                                                                                                                          %-20s
                                                                                                                                                                                                     %%Disc:
                                               pPaymentData->h date.second);
                                                                                                                   %5.2f<BR>",
                                                                                                                                                                  pPaymentData->c_street 2,
                }
                                                                                                                   100.0*pPaymentData->c discount);
                if (bInput)
                                                                                                                                                  c += wsprintf(szForm+c,
                               c += wsprintf(szForm+c,
                                                                                                                                                                          %-20s %-2s %5.5s-%4.4s
                                                                                                                                                                                                                     Phone:
                                               "<BR> <BR>Warehouse: %4.4d"
                                                                                                                   %6.6s-%3.3s-%3.3s-%4.4s<BR> <BR>".
                                                                      District: <INPUT
                                                                                                                                                                  pPaymentData->c city,
NAME=\"DID*\" SIZE=1><BR> <BR> <BR> <BR> <BR>"
                                                                                                                   pPaymentData->c_state, pPaymentData->c_zip, pPaymentData->c_zip+5,
                                               "Customer: <INPUT NAME=\"CID*\"
                                                                                                                                                                  pPaymentData->c phone,
SIZE=4>"
                                                                                                                   pPaymentData->c phone+6, pPaymentData->c phone+9,
                                               "Cust-Warehouse: <INPUT NAME=\"CWI*\"
                                                                                                                   pPaymentData->c phone+12);
SIZE=4> "
                                               "Cust-District: <INPUT NAME=\"CDI*\"
                                                                                                                                                  c += sprintf(szForm+c,
SIZE=1><BR>"
                                                                                                                                                                  "Amount Paid:
                                                                                                                                                                                               $%7.2f
                                                                                                                                                                                                              New
                                                                                                                   Cust-Balance: $%14.2f<BR>"
                                                                             <INPUT
                                               "Name:
NAME=\"CLT*\" SIZE=16>
                                                           Since: <BR>"
                                                                                                                                                                  "Credit Limit: $\%13.2f\le BR \right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right\right
                                                                                          Credit: <BR>"
                                                                                                                                                                  , pPaymentData->h_amount,
                                                                                          Disc:<BR>"
                                                                                                                   pPaymentData->c balance
                                                                                          Phone: <BR>
                                                                                                                                                                  , pPaymentData->c_credit_lim
<BR>"
                                               "Amount Paid:
                                                                            $<INPUT
NAME=\"HAM*\" SIZE=7>
                                              New Cust-Balance: <BR>"
                                                                                                                                                  if (pPaymentData->c_credit[0] == 'B' &&
                                                "Credit Limit:<BR> <BR>Cust-Data: <BR>
                                                                                                                   pPaymentData->c credit[1] == 'C')
<BR> <BR> <BR> </PRE></HR>"
                                                                                                                                                                  c += wsprintf(szForm+c,
                                               "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                                                                                                                                  "Cust-Data:
VALUE=\"Process\"><INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                                                   %-50.50s<BR>
                                                                                                                                                  %-50.50s<BR>
                                                                                                                                                                                  %-50.50s<BR>
VALUE=\"Menu\">"
                                                                                                                   %-50.50s<BR>".
                                               "</BODY></FORM></HTML>"
                                                                                                                                                                                                 pPaymentData->c data,
                                                                                                                   pPaymentData->c_data+50, pPaymentData->c_data+100,
                                               , Term.pClientData[iTermId].w_id);
                                                                                                                   pPaymentData->c data+150);
               }
               else
                                                                                                                                                  else
                                                                                                                                                                  strcpy(szForm+c, "Cust-Data: <BR> <BR>
                                                                                                                   <BR> <BR>");
                               c += wsprintf(szForm+c,
                                                "<BR> <BR>Warehouse: %4.4d
  District: %2.2d<BR>"
                                                                                                                                                  strcat(szForm,
                                                                                                                                                                                  " <BR></font></PRE><HR>"
                                                                           %-20s<BR>"
                                               "%-20s
                                                                                                                                                                                                                  "<INPUT
                                               "%-20s
                                                                           %-20s<BR>"
                                                                                                                   TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..NewOrder..\">"
                                               "%-20s %-2s %5.5s-%4.4s
                                                                                                                                                                                                                 "<INPUT
                                                                                          %-20s %-2s
                                                                                                                   TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Payment..\">"
%5.5s-%4.4s<BR> <BR>"
                                               "Customer: %4.4d Cust-Warehouse: %4.4d
                                                                                                                                                                                                                 "<INPUT
Cust-District: %2.2d < BR>"
                                                                                                                   TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Delivery..\">"
                                                                                                                                                                                                                 "<INPUT
                                               "Name: %-16s %-2s %-16s Since:
%2.2d-%2.2d-%4.4d<BR>"
                                                                                                                   TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Order-Status..\">
                                                       %-20s
                                                                                  Credit: %-2s<BR>"
                                                                                                                                                                                                                 "<INPUT
                                                                                                                   TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Stock-Level..\">"
                                               , Term.pClientData[iTermId].w id,
                                                                                                                                                                                                                 "<INPUT
                                                                                                                   TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..Exit..\">"
pPaymentData->d_id
                                               , pPaymentData->w street 1,
pPaymentData->d street 1
                                                                                                                    "</BODY></FORM></HTML>");
                                               , pPaymentData->w_street_2,
pPaymentData->d_street_2
                                               , pPaymentData->w_city,
pPaymentData->w state, pPaymentData->w zip, pPaymentData->w zip+5
                                               , pPaymentData->d_city,
                                                                                                                   /* FUNCTION: MakeOrderStatusForm
pPaymentData->d_state, pPaymentData->d_zip, pPaymentData->d_zip+5
```

```
* COMMENTS:
                   The internal client buffer is created when the terminal id
                                                                                                   "Order-Number: %8.8d Entry-Date:
                                                                      %2.2d-%2.2d-%4.4d %2.2d:%2.2d: Carrier-Number: %2.2d<BR>"
is assigned and should not
                                                                                                   "Supply-W Item-Id Qty Amount
                                      be freed except when the client
terminal id is no longer needed.
                                                                      Delivery-Date<BR>",
                                                                                                   pOrderStatusData->o id,
                                                                                                   pOrderStatusData->o entry d.day,
void\ Make Order Status Form (int\ iTermId, ORDER\_STATUS\_DATA
                                                                                                   pOrderStatusData->o_entry_d.month,
*pOrderStatusData, BOOL bInput, char *szForm)
                                                                                                   pOrderStatusData->o_entry_d.year,
                                                                                                   pOrderStatusData->o entry d.hour,
                                                                                                   pOrderStatusData->o entry d.minute,
         static char szBR[] = " <BR> <BR> <BR> <BR> <BR> <BR> <BR>
                                                                                                   pOrderStatusData->o_entry_d.second,
<BR> <BR> <BR> <BR> <BR> <BR> ";
                                                                                                   pOrderStatusData->o_carrier_id);
         c = wsprintf(szForm,
                                                                                         for(i=0; i < pOrderStatusData->o_ol_cnt; i++)
                   "<HTML><HEAD><TITLE>TPC-C
Order-Status</TITLE></HEAD><BODY>"
                                                                                                   c += sprintf(szForm+c, " %4.4d
                                                                                                                                  %6.6d
                   "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
                                                                      %2.2d $%8.2f
                                                                                        %2.2d-%2.2d-%4.4d<BR>",
                   "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\"
VALUE=\"0\">"
                                                                      pOrderStatusData->OL[i].ol_supply_w_id,
                   "<INPUT TYPE=\"hidden\" NAME=\"ERROR\"
                                                                                                             pOrderStatusData->OL[i].ol i id,
VALUE=\"0\">"
                   "<INPUT TYPE=\"hidden\" NAME=\"FORMID\"
                                                                      pOrderStatusData->OL[i].ol quantity,
VALUE=\"%d\">"
                   "<INPUT TYPE=\"hidden\" NAME=\"TERMID\"
                                                                      pOrderStatusData->OL[i].ol amount,
VALUE=\"\%d\">"
                   "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\"
                                                                      pOrderStatusData->OL[i].ol_delivery_d.day,
VALUE=\"%d\">"
                   "<PRE><font face=\"Courier\">
                                                                      pOrderStatusData->OL[i].ol_delivery_d.month,
Order-Status<BR>"
                   "Warehouse: %4.4d ".
                                                                      pOrderStatusData->OL[i].ol_delivery_d.year);
                   ORDER STATUS FORM, iTermId,
Term.pClientData[iTermId].iSyncId, Term.pClientData[iTermId].w_id);
                                                                                         strncpy( szForm+c, szBR, (15-i)*5 );
         if (bInput)
                                                                                         c += (15-i)*5;
                   strcpy(szForm+c,
                                                                                         strcpy(szForm+c,
                             "District: <INPUT NAME=\"DID*\"
                                                                                                   "</font></PRE><HR><INPUT
SIZE=1><BR>"
                                                                      TYPE=\"submit\" NAME=\"CMD\" VALUE=\"..NewOrder..\">"
                            "Customer: <INPUT NAME=\"CID*\"
                                                                                                   "<INPUT TYPE=\"submit\" NAME=\"CMD\"
SIZE=4> Name:
                          <INPUT NAME=\"CLT*\" SIZE=23><BR>"
                                                                      VALUE=\"..Payment..\">"
                             "Cust-Balance: <BR> <BR>"
                                                                                                   "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                             "Order-Number:
                                                                      VALUE=\"..Delivery..\">"
                                                 Entry-Date:
  Carrier-Number: <BR>"
                                                                                                   "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                            "Supply-W Item-Id Qty Amount
                                                                      VALUE=\"..Order-Status..\">"
Delivery-Date<BR> <BR> <BR> <BR> "
                                                                                                   "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                             " <BR> <BR> <BR> <BR> <BR>
                                                                      VALUE=\"..Stock-Level..\">"
<BR> <BR> <BR> <BR> </PRE>"
                                                                                                   "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                             "<HR><INPUT TYPE=\"submit\"
                                                                      VALUE=\"..Exit..\">"
NAME=\"CMD\" VALUE=\"Process\"><INPUT TYPE=\"submit\"
                                                                                                   "</BODY></FORM></HTML>");
NAME=\"CMD\" VALUE=\"Menu\">"
                             "</BODY></FORM></HTML>" );
         }
                                                                      /* FUNCTION: MakeDeliveryForm
         else
                                                                       * COMMENTS:
                                                                                         The internal client buffer is created when the terminal id
                   c += wsprintf(szForm+c,
                            "District: %2.2d<BR>"
                                                                      is assigned and should not
                            "Customer: %4.4d Name: %-16s %-2s
                                                                                                             be freed except when the client
%-16s<BR>"
                                                                      terminal id is no longer needed.
                            pOrderStatusData->d id,
pOrderStatusData->c_id,
                            pOrderStatusData->c first,
                                                                      void MakeDeliveryForm(int iTermId, DELIVERY DATA *pDeliveryData,
pOrderStatusData->c_middle, pOrderStatusData->c_last);
                                                                      BOOL bInput, char *szForm)
                   c += sprintf(szForm+c, "Cust-Balance: $\%9.2f\le BR>
<BR>".
                            pOrderStatusData->c balance);
                                                                                c = wsprintf(szForm,
                                                                                          "<HTML><HEAD><TITLE>TPC-C
                   c += wsprintf(szForm+c,
                                                                      Delivery</TITLE></HEAD><BODY>"
```

```
"<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
                                                                                                   filling in the required input variables. it then
                   "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\"
                                                                      calls the SQLNewOrder
VALUE=\"%d\">"
                                                                                                   transaction, constructs the output form and
                   "<INPUT TYPE=\"hidden\" NAME=\"ERROR\"
                                                                      writes it back to client
VALUE=\"0\">"
                                                                                                   browser
                   "<INPUT TYPE=\"hidden\" NAME=\"FORMID\"
VALUE=\"%d\">"
                                                                      void ProcessNewOrderForm(EXTENSION CONTROL BLOCK *pECB, int
                   "<INPUT TYPE=\"hidden\" NAME=\"TERMID\"
VALUE=\"%d\">"
                                                                      iTermId, char *szBuffer)
                   "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\"
                                                                                PNEW_ORDER_DATA
VALUE=\"\%d\">"
                                                                                                                      pNewOrder;
                   "<PRE><font face=\"Courier\">
Delivery<BR>"
                                                                                pNewOrder =
                   "Warehouse: %4.4d<BR> <BR>",
                                                                      Term.pClientData[iTermId].pTxn->BuffAddr_NewOrder();
                   (!bInput && (pDeliveryData->exec status code !=
eOK)) ? ERR_TYPE_DELIVERY_POST: 0,
                                                                                ZeroMemory(pNewOrder, sizeof(NEW_ORDER_DATA));
                                                                                pNewOrder->w_id = Term.pClientData[iTermId].w_id;
                   DELIVERY FORM, iTermId,
Term.pClientData[iTermId].iSyncId, Term.pClientData[iTermId].w_id);
                                                                                GetNewOrderData(pECB->lpszQueryString, pNewOrder);
         if (bInput)
                                                                                Term.pClientData[iTermId].pTxn->NewOrder();
                   strcpy( szForm+c,
                                                                                pNewOrder =
                             "Carrier Number: <INPUT NAME=\"OCD*\"
                                                                      Term.pClientData[iTermId].pTxn->BuffAddr NewOrder();
SIZE=1><BR> <BR>'
                                                                                MakeNewOrderForm(iTermId, pNewOrder, OUTPUT FORM,
                            "Execution Status: <BR> <BR> <BR> <BR>
                                                                      szBuffer);
<BR> <BR> <BR> "
                            " <BR> <BR> <BR> <BR> <BR>
<BR> <BR> </font></PRE><HR>'
                                                                      /* FUNCTION: void ProcessPaymentForm
                             "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"Process\">"
                                                                       * PURPOSE:
                                                                                         This function gets and validates the input data from the
                            "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                      payment form
VALUE=\"Menu\">"
                                                                                                   filling in the required input variables. It then
                             "</BODY></FORM></HTML>" );
                                                                      calls the SQLPayment
                                                                                                   transaction, constructs the output form and
         }
         else
                                                                      writes it back to client
                                                                                                   browser.
                   wsprintf( szForm+c,
                             "Carrier Number: %2.2d<BR> <BR>"
                                                                       * ARGUMENTS:
                                                                                         EXTENSION CONTROL BLOCK
                                                                                                                                *pECB
                            "Execution Status: %s <BR> <BR> <BR>
                                                                      passed in structure pointer from inetsry.
<BR> <BR> <BR> <BR> "
                                                                                                            int
                             " <BR> <BR> <BR> <BR> <BR>
                                                                                         iTermId
                                                                                                  client browser terminal id
<BR> <BR> </font></PRE>"
                             "<HR><INPUT TYPE=\"submit\"
NAME=\"CMD\" VALUE=\"..NewOrder..\">'
                                                                      void ProcessPaymentForm(EXTENSION CONTROL BLOCK *pECB, int
                             "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                      iTermId, char *szBuffer)
VALUE=\"..Payment..\">"
                            "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Delivery..\">"
                                                                                PPAYMENT DATA pPayment;
                            "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Order-Status..\">"
                                                                                pPayment =
                             "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                      Term.pClientData[iTermId].pTxn->BuffAddr_Payment();
                                                                                ZeroMemory(pPayment, sizeof(PAYMENT DATA));
VALUE=\"..Stock-Level..\">"
                            "<INPUT TYPE=\"submit\" NAME=\"CMD\"
                                                                                pPayment->w_id = Term.pClientData[iTermId].w_id;
VALUE=\"..Exit..\">"
                                                                                GetPaymentData(pECB->lpszQueryString, pPayment);
                            "</BODY></FORM></HTML>"
                                                                                Term.pClientData[iTermId].pTxn->Payment();
                            , pDeliveryData->o carrier id,
                                                                                pPayment =
                            (pDeliveryData->exec_status_code == eOK)?
"Delivery has been queued.": "Delivery Post Failed
                                                                      Term.pClientData[iTermId].pTxn->BuffAddr Payment();
                                                                                MakePaymentForm(iTermId, pPayment, OUTPUT_FORM,
                                                                      szBuffer);
/* FUNCTION: ProcessNewOrderForm
                                                                      /* FUNCTION: ProcessOrderStatusForm
* PURPOSE:
                   This function gets and validates the input data from the
                                                                       * PURPOSE:
                                                                                         This function gets and validates the input data from the
new order form
                                                                      Order Status
```

```
form filling in the required input variables. It
                                                                                   {
then calls the
                                                                                             //post delivery info
                                                                                             if ( PostDeliveryInfo(pDelivery->w_id,
                              SOLOrderStatus transaction, constructs the
output form and writes it
                                                                         pDelivery->o_carrier_id))
                              back to client browser
                                                                                                       pDelivery->exec_status_code =
                                                                         eDeliveryFailed;
* ARGUMENTS:
                   EXTENSION CONTROL BLOCK
                                                            *pECB
                                                                                             else
passed in structure pointer from inetsry.
                                                                                                       pDelivery->exec status code = eOK;
                    iTermId client browser terminal id
                                                                                   else // delivery is done synchronously if no delivery threads
                                                                         configured
                                                                                             Term.pClientData[iTermId].pTxn->Delivery();
void ProcessOrderStatusForm(EXTENSION_CONTROL_BLOCK *pECB, int
                                                                                   pDelivery =
iTermId, char *szBuffer)
                                                                         Term.pClientData[iTermId].pTxn->BuffAddr Delivery();
                                                                                   MakeDeliveryForm(iTermId, pDelivery, OUTPUT_FORM,
          PORDER STATUS DATA
                                        pOrderStatus:
                                                                         szBuffer);
          pOrderStatus =
Term.pClientData[iTermId].pTxn->BuffAddr OrderStatus();
                                                                         /* FUNCTION: ProcessStockLevelForm
          ZeroMemory(pOrderStatus, sizeof(ORDER_STATUS_DATA));
          pOrderStatus->w id = Term.pClientData[iTermId].w id;
                                                                          * PURPOSE:
                                                                                             This function gets and validates the input data from the
          GetOrderStatusData(pECB->lpszQueryString, pOrderStatus);
                                                                         Stock Level
                                                                                                       form filling in the required input variables. It
          Term.pClientData[iTermId].pTxn->OrderStatus();
                                                                         then calls the
                                                                                                       SQLStockLevel transaction, constructs the
          pOrderStatus =
                                                                         output form and writes it
Term.pClientData[iTermId].pTxn->BuffAddr_OrderStatus();
                                                                                                       back to client browser.
          MakeOrderStatusForm(iTermId, pOrderStatus, OUTPUT FORM,
                                                                          * ARGUMENTS:
szBuffer):
                                                                                             EXTENSION CONTROL BLOCK
                                                                                                                                     *pECB
                                                                         passed in structure pointer from inetsry.
/* FUNCTION: ProcessDeliveryForm
                                                                                             iTermId
                                                                                                       client browser terminal id
* PURPOSE:
                   This function gets and validates the input data from the
delivery form
                                                                         void ProcessStockLevelForm(EXTENSION_CONTROL_BLOCK *pECB, int
                              filling in the required input variables. It then
                                                                         iTermId, char *szBuffer)
calls the PostDeliveryInfo
                              Api, The client is then informed that the
                                                                                                       *ptr = pECB->lpszQueryString;
transaction has been posted.
                                                                                   char
                   EXTENSION_CONTROL_BLOCK
* ARGUMENTS:
                                                                                   PSTOCK_LEVEL_DATA
                                                            *pECB
                                                                                                                 pStockLevel;
passed in structure pointer from inetsrv.
                                        int
                                                                                   pStockLevel =
                                                                         Term.pClientData[iTermId].pTxn->BuffAddr StockLevel();
                    iTermId client browser terminal id
                                                                                   ZeroMemory( pStockLevel, sizeof(STOCK_LEVEL_DATA) );
*/
                                                                                   pStockLevel->w id = Term.pClientData[iTermId].w id;
void ProcessDeliveryForm(EXTENSION_CONTROL_BLOCK *pECB, int
                                                                                   pStockLevel->d_id = Term.pClientData[iTermId].d_id;
iTermId, char *szBuffer)
                                                                                   pStockLevel->threshold = GetIntKeyValue(&ptr, "TT*",
                                                                         ERR STOCKLEVEL MISSING THRESHOLD KEY,
          char
                    *ptr = pECB->lpszQueryString;
                                                                         ERR_STOCKLEVEL_THRESHOLD_INVALID);
                                                                                   if ( pStockLevel->threshold >= 100 \parallel pStockLevel->threshold < 0 )
          PDELIVERY DATA pDelivery;
                                                                                             throw new CWEBCLNT ERR(
          pDelivery =
                                                                         ERR_STOCKLEVEL_THRESHOLD_RANGE );
Term.pClientData[iTermId].pTxn->BuffAddr Delivery();
          ZeroMemory(pDelivery, sizeof(DELIVERY_DATA));
                                                                                   Term.pClientData[iTermId].pTxn->StockLevel();
          pDelivery->w id = Term.pClientData[iTermId].w id;
                                                                                   pStockLevel =
                                                                         Term.pClientData[iTermId].pTxn->BuffAddr StockLevel();
          pDelivery->o carrier id
                                        = GetIntKeyValue(&ptr, "OCD*",
ERR_DELIVERY_MISSING_OCD_KEY,
                                                                                   Make Stock Level Form (iTerm Id, pStock Level, OUTPUT\_FORM,
ERR_DELIVERY_CARRIER_INVALID);
                                                                         szBuffer);
          if (pDelivery->o_carrier_id > 10 || pDelivery->o_carrier_id < 1)
                    throw new CWEBCLNT_ERR(
ERR DELIVERY CARRIER ID RANGE);
                                                                         /* FUNCTION: GetNewOrderData
          if (dwNumDeliveryThreads)
```

```
* PURPOSE:
                    This function extracts and validates the new order form
data from an http command string.
                                                                                                         items++;
* ARGUMENTS:
                   LPSTR
                                                  lpszQueryString
                                                                                               else
client browser http command string
                                                                                                         // nothing entered for supply warehouse, so
                                        NEW ORDER DATA
                                                                          item id and qty must also be blank
*pNewOrderData
                              pointer to new order data structure
                                                                                                         GetKeyValue(&ptr, szIID[i], szTmp,
                                                                          sizeof(szTmp), ERR NEWORDER MISSING IID KEY);
                                                                                                         if (szTmp[0])
                                                                                                                   throw new CWEBCLNT ERR(
                                                                          ERR NEWORDER ITEMID WITHOUT SUPPW);
void GetNewOrderData(LPSTR lpszQueryString, NEW ORDER DATA
*pNewOrderData)
                                                                                                         GetKeyValue(&ptr, szQty[i], szTmp,
                                                                          sizeof(szTmp), ERR_NEWORDER_MISSING_QTY_KEY);
          char
                    szTmp[26];
          int
                                                                                                         if (szTmp[0])
          short
                    items;
                                                                                                                   throw new CWEBCLNT ERR(
                                                                          ERR NEWORDER QTY WITHOUT SUPPW);
          int
                              ol i id, ol quantity;
          char
                    *ptr = lpszQueryString;
          static char szSP[MAX OL NEW ORDER ITEMS][6] =
                                                                                     if ( items == 0 )
                    { "SP00*", "SP01*", "SP02*", "SP03*", "SP04*", "SP05*", "SP06*", "SP07*", "SP08*", "SP09*", "SP10*", "SP11*", "SP12*", "SP13*", "SP14*" };
                                                                                               throw new CWEBCLNT ERR(
                                                                          ERR NEWORDER NOITEMS ENTERED);
          static char szIID[MAX OL NEW ORDER ITEMS][7] =
                                                                                     pNewOrderData->o_ol_cnt = items;
                    {"IID00*","IID01*","IID02*","IID03*","IID04*",
"IID05*","IID06*","IID07*","IID08*","IID09*",
"IID11*","IID12*","IID13*","IID14*"};
                                                                          /* FUNCTION: GetPaymentData
          static char szQty[MAX_OL_NEW_ORDER_ITEMS][7] =
                    { "Qty00*", "Qty01*", "Qty02*", "Qty03*", "Qty04*", "Qty05*", "Qty06*", "Qty07*", "Qty08*", "Qty09*", "Qty10*", "Qty11*", "Qty12*", "Qty13*", "Qty14*" };
                                                                           * PURPOSE:
                                                                                               This function extracts and validates the payment form
                                                                          data from an http command string.
                                                                           * ARGUMENTS:
                                                                                               LPSTR
                                                                                                                             lpszQueryString
          pNewOrderData->d id = GetIntKeyValue(&ptr, "DID*",
                                                                          client browser http command string
ERR NEWORDER FORM MISSING DID,
                                                                                                                   PAYMENT DATA
ERR NEWORDER_DISTRICT_INVALID);
                                                                           *pPaymentData
                                                                                                         pointer to payment data structure
          pNewOrderData->c id = GetIntKeyValue(&ptr, "CID*",
ERR NEWORDER CUSTOMER_KEY,
ERR NEWORDER CUSTOMER INVALID);
                                                                           void GetPaymentData(LPSTR lpszQueryString, PAYMENT DATA
                                                                           *pPaymentData)
          for(i=0, items=0; i<MAX OL NEW ORDER ITEMS; i++)
                                                                                               szTmp[26];
                                                                                     char
                    GetKeyValue(&ptr, szSP[i], szTmp, sizeof(szTmp),
                                                                                               *ptr = lpszQueryString;
                                                                                     char
ERR NEWORDER MISSING SUPPW KEY);
                                                                                     BOOL
                                                                                               bCustIdBlank;
                    if(szTmp[0])
                                                                                     pPaymentData->d id = GetIntKeyValue(&ptr, "DID*",
                                                                          ERR_PAYMENT_MISSING_DID_KEY,
                              if ( !IsNumeric(szTmp) )
                                        throw new CWEBCLNT ERR(
                                                                          ERR PAYMENT DISTRICT INVALID);
ERR NEWORDER SUPPW INVALID);
                              pNewOrderData-\!\!>\!\!OL[items].ol\_supply\_w\_id
                                                                                     GetKeyValue(&ptr, "CID*", szTmp, sizeof(szTmp),
                                                                          ERR PAYMENT MISSING CID KEY);
= (short)atoi(szTmp);
                                                                                     if(szTmp[0] == 0)
                              ol i id = pNewOrderData->OL[items].ol i id
                                                                                               bCustIdBlank = TRUE;
                                        GetIntKeyValue(&ptr, szIID[i],
                                                                                               pPaymentData->c id = 0;
ERR NEWORDER MISSING IID KEY,
ERR NEWORDER ITEMID INVALID);
                                                                                    else
                              if (ol i id > 999999 || ol i id < 1)
                                                                                               // parse customer id and verify that last name was NOT
                                        throw new CWEBCLNT_ERR(
                                                                          entered
ERR NEWORDER ITEMID RANGE);
                                                                                               bCustIdBlank = FALSE;
                                                                                               if ( !IsNumeric(szTmp) )
                                                                                                         throw new CWEBCLNT ERR(
                              ol quantity =
pNewOrderData->OL[items].ol_quantity =
                                                                          ERR PAYMENT CUSTOMER INVALID);
                                        GetIntKeyValue(&ptr, szQty[i],
                                                                                               pPaymentData->c_id = atoi(szTmp);
ERR_NEWORDER_MISSING_QTY_KEY,
ERR_NEWORDER_QTY_INVALID);
                              if (ol quantity > 99 \parallel ol quantity < 1)
                                                                                    pPaymentData->c w id = GetIntKeyValue(&ptr, "CWI*",
                                        throw new CWEBCLNT_ERR(
                                                                          ERR_PAYMENT_MISSING_CWI_KEY,
ERR NEWORDER QTY RANGE);
                                                                          ERR PAYMENT CWI INVALID);
```

```
pPaymentData->c d id = GetIntKeyValue(&ptr, "CDI*".
                                                                                          if (strlen(pOrderStatusData->c last) >
ERR PAYMENT MISSING CDI KEY, ERR PAYMENT CDI INVALID);
                                                                      LAST NAME LEN)
                                                                                                    throw new CWEBCLNT ERR(
                                                                       ERR ORDERSTATUS CLT RANGE);
         if (bCustIdBlank)
                   // customer id is blank, so last name must be entered
                                                                                          strcpy(pOrderStatusData->c_last, szTmp);
                   GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR PAYMENT MISSING CLT KEY);
                                                                                else
                                                                                          // parse customer id and verify that last name was NOT
                   if(szTmp[0] == 0)
                                                                                 {
                             throw new CWEBCLNT ERR(
                                                                       entered
ERR PAYMENT MISSING CID CLT);
                                                                                          if ( !IsNumeric(szTmp) )
                                                                                                    throw new CWEBCLNT ERR(
                                                                       ERR ORDERSTATUS CID INVALID);
                    strupr( szTmp );
                   if (strlen(pPaymentData->c last) > LAST NAME LEN
                                                                                          pOrderStatusData->c id = atoi(szTmp);
                                                                                          GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
                             throw new CWEBCLNT ERR(
                                                                       ERR ORDERSTATUS MISSING CLT KEY);
ERR PAYMENT LAST NAME TO LONG);
                                                                                          if (szTmp[0] != 0)
                   strcpy(pPaymentData->c last, szTmp);
                                                                                                    throw new CWEBCLNT ERR(
                                                                       ERR_ORDERSTATUS_CID_AND_CLT );
         else
                   // parse customer id and verify that last name was NOT
entered
                   GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR_PAYMENT_MISSING_CLT_KEY);
                                                                       /* FUNCTION: BOOL IsNumeric(char *ptr)
                   if (szTmp[0]!=0)
                             throw new CWEBCLNT ERR(
                                                                       * PURPOSE:
                                                                                          This function determines if a string is numeric. It fails if
ERR_PAYMENT_CID_AND_CLT );
                                                                       any characters other
                                                                                                    than numeric and null terminator are present.
         GetKeyValue(&ptr, "HAM*", szTmp, sizeof(szTmp),
                                                                       * ARGUMENTS:
                                                                                          char
                                                                                                                       *ptr
                                                                                                                                 pointer to
ERR_PAYMENT_MISSING_HAM_KEY);
                                                                       string to check.
         if (!IsDecimal(szTmp))
                   throw new CWEBCLNT_ERR(
                                                                       * RETURNS:
                                                                                                    BOOL
                                                                                                             FALSE
                                                                                                                       if string is not all
ERR PAYMENT HAM INVALID);
                                                                       numeric
         pPaymentData->h amount = atof(szTmp);
                                                                                                                                 TRUE
                                                                                                                                          if
         if (pPaymentData->h_amount >= 10000.00 ||
                                                                       string contains only numeric characters i.e. '0' - '9'
pPaymentData->h amount < 0)
                   throw new CWEBCLNT ERR(
ERR PAYMENT HAM RANGE);
                                                                       BOOL IsNumeric(char *ptr)
                                                                                if (*ptr == 0)
/* FUNCTION: GetOrderStatusData
                                                                                          return FALSE;
* PURPOSE:
                   This function extracts and validates the payment form
                                                                                while( *ptr && isdigit(*ptr) )
data from an http command string.
                                                                                          ptr++;
                                                                                return (!*ptr);
void GetOrderStatusData(LPSTR lpszQueryString, ORDER STATUS DATA
*pOrderStatusData)
                                                                       /* FUNCTION: BOOL IsDecimal(char *ptr)
                                                                       * PURPOSE:
                                                                                          This function determines if a string is a non-negative
         char
                   szTmp[26];
                                                                       decimal value.
         char
                   *ptr = lpszQueryString;
                                                                              It fails if any characters other than a series of numbers followed by
         pOrderStatusData->d_id = GetIntKeyValue(&ptr, "DID*",
                                                                                                    a decimal point, another series of numbers,
ERR ORDERSTATUS MISSING DID KEY,
                                                                       and a null terminator are present.
ERR ORDERSTATUS DID INVALID);
                                                                       * ARGUMENTS:
                                                                                                                       *ptr
                                                                                          char
                                                                                                                                 pointer to
         GetKeyValue(&ptr, "CID*", szTmp, sizeof(szTmp),
                                                                       string to check.
ERR_ORDERSTATUS_MISSING_CID_KEY);
         if (szTmp[0] == 0)
                                                                       * RETURNS:
                                                                                                                      if string is not a valid
                                                                                                    BOOL
                                                                                                             FALSE
                   // customer id is blank, so last name must be entered
                                                                       non-negative decimal value
                   pOrderStatusData->c id = 0;
                                                                                                                                 TRUE
                                                                                                                                          if
                   GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
                                                                       string is OK
ERR_ORDERSTATUS_MISSING_CLT_KEY);
                   if(szTmp[0] == 0)
                             throw new CWEBCLNT ERR(
                                                                       BOOL IsDecimal(char *ptr)
ERR ORDERSTATUS MISSING CID CLT);
                                                                                char *dotptr;
                   _strupr( szTmp );
                                                                                BOOL bValid;
```

```
#define TP MAX RETRIES
          if (*ptr == 0)
                                                                                      50
                    return FALSE:
          // find decimal point
                                                                            //note that the welcome form must be processed first as terminal ids assigned
          dotptr = strchr( ptr, '.' );
          if (dotptr == NULL)
                                                                            //terminal id is assigned then the forms can be processed in any order.
                                                                            #define WELCOME_FORM
                    // no decimal point, so just check for numeric
                    return IsNumeric(ptr);
                                                                                                 //beginning form no term id assigned, form id
                                                                            #define MAIN_MENU_FORM
          *dotptr = 0; // temporarily replace decimal with a terminator
                                                                                                 //term id assigned main menu form id
          if (*ptr != 0)
                                                                            #define NEW ORDER FORM
                    bValid = IsNumeric(ptr);
                                                                                                 //new order form id
          // string starts with decimal point
                                                                            #define PAYMENT_FORM
          else if (*(dotptr+1) == 0)
                                                                                                 //payment form id
                    return FALSE; // nothing but a decimal point is bad
                                                                            #define DELIVERY FORM
          else
                                                                                                 //delivery form id
                                                                            #define ORDER STATUS FORM
                    bValid = TRUE;
                                                                                                //order status id
          if (*(dotptr+1) != 0)
                                                                            #define STOCK LEVEL FORM
                    // check text after decimal point
                                                                                                //stock level form id
                    bValid &= IsNumeric(dotptr+1);
                                                                            //This macro is used to prevent the compiler error unused formal parameter
          *dotptr = '.'; // replace decimal point
                                                                            #define UNUSEDPARAM(x) (x = x)
          return bValid;
}
                                                                            //This structure defines the data necessary to keep distinct for each terminal or
                                                                            client connection.
                                                                            typedef struct CLIENTDATA
tpcc.def
                                                                                                                     iNextFree;
                                                                                      int
                                                                            //index of next free element or -1 if this entry in use.
LIBRARY TPCC.DLL
                                                                                                                      w id:
                                                                                      //warehouse id assigned at welcome form
EXPORTS
                                                                                                                     d_id;
                                                                                      //district id assigned at welcome form
          GetExtensionVersion @1
          HttpExtensionProc @2
                                                                                      int
                                                                                                                     iSyncId;
          TerminateExtension @3
                                                                            //syncronization id
                                                                                                                     iTickCount;
                                                                                      int
                                                                                      //time of last access;
tpcc.h
                                                                                      CTPCC BASE
                                                                                                           *pTxn;
          FILE:
                               TPCC.H
                                                                            } CLIENTDATA, *PCLIENTDATA;
                                         Microsoft TPC-C Kit Ver.
4.20.000
                                         Copyright Microsoft, 1999
                                                                            //This structure is used to define the operational interface for terminal id support
         All Rights Reserved
                                                                            typedef struct _TERM
                                         Version 4.10.000 audited by
                                                                                                                     iNumEntries;
                                                                                      int
Richard Gimarc, Performance Metrics, 3/17/99
                                                                                                 //total allocated terminal array entries
                                                                                      int
                                                                                                                     iFreeList;
          PURPOSE:
                               Header file for ISAPI TPCC.DLL, defines
                                                                                                 //next available terminal array element or -1 if none
structures and functions used in the isapi tpcc.dll.
                                                                                                                      iMasterSyncId;
                                                                                                //syncronization id
*/
                                                                                      CLIENTDATA
                                                                                                           *pClientData;
                                                                                      //pointer to allocated client data
//VERSION RESOURCE DEFINES
                                                                            } TERM;
#define _APS_NEXT_RESOURCE_VALUE
                                                                            typedef TERM *PTERM;
#define _APS_NEXT_COMMAND_VALUE
                                                                                      //pointer to terminal structure type
#define APS NEXT CONTROL VALUE
                                                                                      enum WEBERROR
#define _APS_NEXT_SYMED_VALUE
                                                                                                 NO ERR.
                                                                                                 ERR COMMAND UNDEFINED,
```

```
ERR D ID INVALID,
                                                                                               m SystemErr = 0;
                  ERR_DELIVERY_CARRIER_ID_RANGE,
                                                                                               m szErrorText = NULL;
                  ERR_DELIVERY_CARRIER_INVALID, ERR_DELIVERY_MISSING_OCD_KEY,
                                                                                      };
                                                                                      CWEBCLNT ERR(WEBERROR Err, char
                  ERR DELIVERY THREAD FAILED,
                  ERR GETPROCADDR FAILED,
                                                                   *szTextDetail, DWORD dwSystemErr)
                  ERR HTML ILL FORMED,
                  ERR_INVALID_SYNC_CONNECTION,
                                                                                               m Error = Err;
                  ERR INVALID TERMID,
                                                                                               m szTextDetail = new
                  ERR LOADDLL FAILED,
                                                                   char[strlen(szTextDetail)+1];
                  ERR_MAX_CONNECTIONS_EXCEEDED,
                                                                                               strcpy( m_szTextDetail, szTextDetail );
                  ERR_MEM_ALLOC_FAILED,
                                                                                               m_SystemErr = dwSystemErr;
                  ERR MISSING REGISTRY ENTRIES,
                                                                                               m szErrorText = NULL;
                  ERR_NEWORDER_CUSTOMER_INVALID,
                                                                                      };
                  ERR NEWORDER CUSTOMER KEY,
                  ERR NEWORDER DISTRICT INVALID,
                                                                                      ~CWEBCLNT ERR()
                  ERR NEWORDER FORM MISSING DID,
                  ERR NEWORDER ITEMID INVALID,
                                                                                               if (m_szTextDetail != NULL)
                  ERR NEWORDER ITEMID RANGE,
                                                                                                        delete [] m szTextDetail;
                  ERR_NEWORDER_ITEMID_WITHOUT_SUPPW,
                                                                                               if (m szErrorText != NULL)
                  ERR_NEWORDER_MISSING_IID_KEY,
                                                                                                        delete [] m_szErrorText;
                  ERR_NEWORDER_MISSING_QTY_KEY,
                                                                                      };
                  ERR NEWORDER MISSING SUPPW KEY,
                  ERR NEWORDER NOITEMS ENTERED,
                                                                                      WEBERROR
                                                                                                        m Error:
                  ERR_NEWORDER_QTY_INVALID,
                                                                                      char
                                                                                                        *m_szTextDetail;
                                                                                                                          //
                  ERR_NEWORDER_QTY_RANGE,
ERR_NEWORDER_QTY_WITHOUT_SUPPW,
ERR_NEWORDER_SUPPW_INVALID,
                                                                                                        *m szErrorText;
                                                                                      char
                                                                                      DWORD
                                                                                                        m SystemErr;
                  ERR NO SERVER SPECIFIED,
                                                                                      int ErrorType() {return ERR TYPE WEBDLL;};
                  ERR_ORDERSTATUS_CID_AND_CLT,
                                                                                      int ErrorNum() {return m_Error;};
                  ERR ORDERSTATUS CID INVALID,
                                                                                      char *ErrorText():
                  ERR_ORDERSTATUS_CLT_RANGE,
                  ERR ORDERSTATUS DID INVALID,
                  ERR ORDERSTATUS MISSING CID CLT,
                  ERR_ORDERSTATUS_MISSING_CID_KEY,
                                                                   //These constants have already been defined in engstut.h, but since we do
                  ERR ORDERSTATUS MISSING CLT KEY,
                                                                   //not want to include it in the delisrv executable
                  ERR ORDERSTATUS MISSING DID KEY,
                                                                            TXN_EVENT_START
                                                                   #define
                  ERR PAYMENT CDI INVALID,
                                                                            TXN EVENT STOP
                                                                   #define
                  ERR_PAYMENT_CID_AND_CLT,
                                                                   #define TXN_EVENT_WARNING
                                                                                                                           //used to
                  ERR_PAYMENT_CUSTOMER_INVALID, ERR_PAYMENT_CWI_INVALID,
                                                                   record a warning into the log
                  ERR PAYMENT DISTRICT_INVALID,
                                                                   //function prototypes
                  ERR PAYMENT HAM INVALID,
                                                                   BOOL APIENTRY DllMain(HANDLE hModule, DWORD ul reason for call,
                  ERR_PAYMENT_HAM_RANGE,
                  ERR_PAYMENT_LAST_NAME_TO_LONG, ERR_PAYMENT_MISSING_CDI_KEY,
                                                                   LPVOID lpReserved);
                                                                   void WriteMessageToEventLog(LPTSTR lpszMsg);
                  ERR PAYMENT MISSING CID CLT,
                                                                   void ProcessQueryString(EXTENSION CONTROL BLOCK *pECB, int
                  ERR PAYMENT MISSING CID KEY,
                                                                   *pCmd, int *pFormId, int *pTermId, int *pSyncId);
                  ERR_PAYMENT_MISSING_CLT,
                                                                   void WelcomeForm(EXTENSION_CONTROL_BLOCK *pECB, char
                  ERR PAYMENT MISSING CLT KEY,
                                                                   *szBuffer);
                  ERR PAYMENT MISSING CWI KEY,
                                                                   void SubmitCmd(EXTENSION CONTROL BLOCK *pECB, char *szBuffer);
                  ERR PAYMENT MISSING DID KEY,
                                                                   void BeginCmd(EXTENSION CONTROL BLOCK *pECB, int iFormId, int
                  ERR_PAYMENT_MISSING_HAM_KEY,
                                                                   iTermId);
                  \begin{array}{l} {\tt ERR\_STOCKLEVEL\_MISSING\_THRESHOLD\_KEY}, \\ {\tt ERR\_STOCKLEVEL\_THRESHOLD\_INVALID}, \end{array}
                                                                   void ProcessCmd(EXTENSION CONTROL BLOCK *pECB, int iFormId, int
                                                                   iTermId);
                  ERR_STOCKLEVEL_THRESHOLD_RANGE,
                                                                   void StatsCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
                  ERR VERSION MISMATCH,
                                                                   void ErrorMessage(EXTENSION CONTROL BLOCK *pECB, int iError, int
                                                                   iErrorType, char *szMsg, int iTermId);
                  ERR_W_ID_INVALID
                                                                   void GetKeyValue(char **pQueryString, char *pKey, char *pValue, int iMax,
         };
                                                                   WEBERROR err);
                                                                   int GetIntKeyValue(char **pQueryString, char *pKey, WEBERROR
class CWEBCLNT ERR: public CBaseErr
                                                                   NoKeyErr, WEBERROR NotIntErr);
                                                                   void TermInit(void);
         public:
                                                                   void TermDeleteAll(void);
                  CWEBCLNT ERR(WEBERROR Err)
                                                                   int TermAdd(void);
                                                                   void TermDelete(int id);
                                                                   void ErrorForm(EXTENSION_CONTROL_BLOCK *pECB, int iType, int
                           m Error = Err;
                           m szTextDetail = NULL;
                                                                   iErrorNum, int iTermId, int iSyncId, char *szErrorText, char *szBuffer );
```

```
void MakeMainMenuForm(int iTermId, int iSyncId, char *szForm);
                                                               #ifdef DEBUG
                                                                FILEFLAGS 0x1L
void MakeStockLevelForm(int iTermId, STOCK LEVEL DATA
*pStockLevelData, BOOL bInput, char *szForm);
                                                               #else
void MakeNewOrderForm(int iTermId, NEW_ORDER_DATA
                                                                FILEFLAGS 0x0L
*pNewOrderData, BOOL bInput, char *szForm);
                                                               #endif
void MakePaymentForm(int iTermId, PAYMENT DATA *pPaymentData,
                                                                FILEOS 0x40004L
BOOL bInput, char *szForm);
                                                                FILETYPE 0x2L
void MakeOrderStatusForm(int iTermId, ORDER STATUS DATA
                                                                FILESUBTYPE 0x0L
*pOrderStatusData, BOOL bInput, char *szForm);
                                                               BEGIN
void MakeDeliveryForm(int iTermId, DELIVERY DATA *pDeliveryData,
                                                                 BLOCK "StringFileInfo"
BOOL bInput, char *szForm);
                                                                 BEGIN
void ProcessNewOrderForm(EXTENSION_CONTROL_BLOCK *pECB, int
                                                                   BLOCK "040904b0"
iTermId, char *szBuffer);
                                                                   BEGIN
void ProcessPaymentForm(EXTENSION_CONTROL_BLOCK *pECB, int
                                                                     VALUE "Comments", "TPC-C HTML DLL Server (DBLIB)\0"
iTermId, char *szBuffer);
                                                                     VALUE "CompanyName", "Microsoft\0"
                                                                     VALUE "FileDescription", "TPC-C HTML DLL Server (DBLIB)\0"
void ProcessOrderStatusForm(EXTENSION CONTROL BLOCK *pECB, int
                                                                     VALUE "FileVersion", "0, 4, 0, 0\0" VALUE "InternalName", "tpcc\0"
iTermId, char *szBuffer);
void ProcessDeliveryForm(EXTENSION_CONTROL_BLOCK *pECB, int
iTermId. char *szBuffer):
                                                                     VALUE "LegalCopyright", "Copyright © 1997\0"
                                                                     VALUE "OriginalFilename", "tpcc.dll\0"
void ProcessStockLevelForm(EXTENSION CONTROL BLOCK *pECB, int
iTermId, char *szBuffer);
                                                                     VALUE "ProductName", "Microsoft tpcc\0"
void GetNewOrderData(LPSTR lpszQueryString, NEW ORDER DATA
                                                                     VALUE "ProductVersion", "0, 4, 0, 0\0"
*pNewOrderData);
                                                                   END
void GetPaymentData(LPSTR lpszQueryString, PAYMENT DATA
                                                                 END
*pPaymentData);
                                                                 BLOCK "VarFileInfo"
void GetOrderStatusData(LPSTR lpszQueryString, ORDER STATUS DATA
                                                                 BEGIN
*pOrderStatusData):
                                                                    VALUE "Translation", 0x409, 1200
BOOL PostDeliveryInfo(short w_id, short o_carrier_id);
                                                                 END
BOOL IsNumeric(char *ptr);
                                                               END
BOOL IsDecimal(char *ptr);
void DeliveryWorkerThread(void *ptr);
                                                               #endif //! MAC
                                                               #ifdef APSTUDIO INVOKED
tpcc.rc
                                                               .......
//Microsoft Developer Studio generated resource script.
                                                               // TEXTINCLUDE
#include "resource.h"
                                                               1 TEXTINCLUDE DISCARDABLE
#define APSTUDIO_READONLY_SYMBOLS
                                                               BEGIN
"resource.h\0"
                                                               END
// Generated from the TEXTINCLUDE 2 resource.
                                                               2 TEXTINCLUDE DISCARDABLE
#include "afxres.h"
                                                               BEGIN
                                                                 "#include ""afxres.h""\r\n"
"\0"
#undef APSTUDIO READONLY SYMBOLS
                                                               END
3 TEXTINCLUDE DISCARDABLE
// English (U.S.) resources
                                                               BEGIN
                                                                  "\r\n'
#if !defined(AFX_RESOURCE_DLL) || defined(AFX_TARG_ENU)
                                                                 "\0"
#ifdef WIN32
                                                               END
LANGUAGE LANG ENGLISH, SUBLANG ENGLISH US
#pragma code_page(1252)
                                                               #endif // APSTUDIO INVOKED
#endif //_WIN32
#ifndef MAC
                                                               //
                                                               // Dialog
// Version
//
                                                               IDD DIALOG1 DIALOG DISCARDABLE 0, 0, 186, 95
VS VERSION INFO VERSIONINFO
                                                               STYLE DS MODALFRAME | WS POPUP | WS CAPTION |
FILEVERSION 0,4,0,0
                                                               WS_SYSMENU
PRODUCTVERSION 0,4,0,0
                                                               CAPTION "Dialog"
FILEFLAGSMASK 0x3fL
```

```
FONT 8, "MS Sans Serif"
                                                                  #include "..\..\common\src\trans.h"
                                                                                                               //tpckit transaction
BEGIN
                                                                  header contains definations of structures specific to TPC-C
 DEFPUSHBUTTON "OK", IDOK, 129, 7, 50, 14
                                                                  #include "..\..\common\src\error.h"
                                                                  #include "..\..\common\src\txn_base.h"
#include "tpcc_com.h"
 PUSHBUTTON "Cancel", IDCANCEL, 129, 24, 50, 14
                                                                  #include "..\..\tpcc_com_ps\src\tpcc_com_ps_i.c"
                                                                  #include "..\..\tpcc_com_all\src\tpcc_com_all_i.c"
// wrapper routine for class constructor
// DESIGNINFO
                                                                    _declspec(dllexport) CTPCC_COM* CTPCC_COM_new(BOOL
//
                                                                  bSinglePool)
#ifdef APSTUDIO INVOKED
GUIDELINES DESIGNINFO DISCARDABLE
                                                                           return new CTPCC_COM(bSinglePool);
BEGIN
 IDD DIALOG1, DIALOG
                                                                  CTPCC COM::CTPCC COM(BOOL bSinglePool)
 BEGIN
   LEFTMARGIN, 7
   RIGHTMARGIN, 179
                                                                           HRESULT hr = NULL;
   TOPMARGIN, 7
                                                                           long lRet = 0;
                                                                           ULONG ulTmpSize = 0;
   BOTTOMMARGIN, 88
 END
END
                                                                           m pTxn
                                                                                                      = NULL;
#endif // APSTUDIO_INVOKED
                                                                           m pNewOrder
                                                                                                      = NULL;
                                                                           m_pPayment
                                                                                                      = NULL;
#endif // English (U.S.) resources
                                                                           m_pStockLevel
                                                                                             = NULL:
m pOrderStatus
                                                                                             = NULL;
                                                                           m bSinglePool
                                                                                             = bSinglePool;
                                                                           ulTmpSize = (ULONG) sizeof(COM_DATA);
#ifndef APSTUDIO INVOKED
VariantInit(&m_vTxn);
                                                                           m_vTxn.vt = VT_SAFEARRAY;
// Generated from the TEXTINCLUDE 3 resource.
                                                                           m_vTxn.parray = SafeArrayCreateVector(VT_UI1, ulTmpSize,
                                                                  ulTmpSize);
                                                                           if (!m_vTxn.parray)
throw new CCOMERR( E FAIL );
#endif // not APSTUDIO_INVOKED
                                                                           memset((void*)m\_vTxn.parray->pvData,0,ulTmpSize);
                                                                           m pTxn = (COM DATA*)m vTxn.parray->pvData;
tpcc_com.cpp
                                                                           hr = CoInitializeEx(NULL, COINIT MULTITHREADED);
                                                                           if (FAILED(hr))
         FILE:
                           TPCC COM.CPP
                                                                           {
                                    Microsoft TPC-C Kit Ver.
                                                                                    throw new CCOMERR( hr );
4.20.000
                                    Copyright Microsoft, 1999
        All Rights Reserved
                                                                           // create components
                                                                           if (m bSinglePool)
                                    not yet audited
                                                                                    hr = CoCreateInstance(CLSID TPCC, NULL,
         PURPOSE:
                           Source file for TPC-C COM+ class
                                                                  CLSCTX_SERVER, IID_ITPCC, (void **)&m_pNewOrder);
implementation.
                                                                                    if (FAILED(hr))
                 Charles Levine (clevine@microsoft.com)
         Contact:
                                                                                             throw new CCOMERR(hr);
  Change history:
                                                                                    // all txns will use same component
                 4.20.000 - first version
                                                                                    m_pPayment = m_pNewOrder;
                                                                                    m pStockLevel = m pNewOrder;
                                                                                    m_pOrderStatus = m_pNewOrder;
// needed for CoinitializeEx
#define _WIN32_WINNT 0x0400
                                                                           else
                                                                           {
#include <windows.h>
                                                                                    // use different components for each txn
```

// need to declare functions for export

#define DllDecl \_\_declspec( dllexport )

CLSCTX\_SERVER, IID\_ITPCC, (void \*\*)&m\_pNewOrder); if (FAILED(hr))

hr = CoCreateInstance(CLSID NewOrder, NULL,

```
throw new CCOMERR(hr);
                                                                       void CTPCC COM::Payment()
                   hr = CoCreateInstance(CLSID Payment, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pPayment);
                   if (FAILED(hr))
                                                                                 VARIANT vTxn_out;
                             throw new CCOMERR(hr);
                                                                                 HRESULT hr = m pPayment->Payment(m vTxn, &vTxn out);
                   hr = CoCreateInstance(CLSID StockLevel, NULL,
                                                                                 if (FAILED(hr))
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pStockLevel);
                                                                                           throw new CCOMERR( hr );
                   if (FAILED(hr))
                                                                                 memcpy(m pTxn, (void
                             throw new CCOMERR(hr);
                                                                        *)vTxn_out.parray->pvData,vTxn_out.parray->rgsabound[0].cElements);
                                                                                 SafeArrayDestroy(vTxn_out.parray);
                   hr = CoCreateInstance(CLSID OrderStatus, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pOrderStatus);
                                                                                 if ( m_pTxn->ErrorType != ERR_SUCCESS )
                   if (FAILED(hr))
                                                                                           throw new CCOMERR( m_pTxn->ErrorType,
                             throw new CCOMERR(hr);
                                                                       m_pTxn->error );
         // call setcomplete to release each component back into pool
                                                                       void CTPCC_COM::StockLevel()
          hr = m pNewOrder->CallSetComplete();
         if (FAILED(hr))
                                                                                 VARIANT vTxn_out;
                   throw new CCOMERR(hr);
                                                                                 HRESULT hr = m_pStockLevel->StockLevel(m_vTxn,
          if (!m bSinglePool)
                                                                       &vTxn out);
                                                                                 if (FAILED(hr))
                   hr = m_pPayment->CallSetComplete();
                                                                                           throw new CCOMERR( hr );
                   if (FAILED(hr))
                                                                                 memcpy(m pTxn, (void
                                                                        *)vTxn_out.parray->pvData,vTxn_out.parray->rgsabound[0].cElements);
                             throw new CCOMERR(hr);
                                                                                 SafeArrayDestroy(vTxn out.parray);
                   hr = m_pStockLevel->CallSetComplete();
                                                                                 if ( m_pTxn->ErrorType != ERR SUCCESS )
                   if (FAILED(hr))
                                                                                           throw new CCOMERR( m_pTxn->ErrorType,
                             throw new CCOMERR(hr);
                                                                       m_pTxn->error );
                   hr = m pOrderStatus->CallSetComplete();
                   if (FAILED(hr))
                             throw new CCOMERR(hr);
                                                                        void CTPCC_COM::OrderStatus()
          }
                                                                                 VARIANT vTxn out;
}
CTPCC_COM::~CTPCC_COM()
                                                                                 HRESULT hr = m_pOrderStatus->OrderStatus(m_vTxn,
                                                                       &vTxn out);
                                                                                 if (FAILED(hr))
          if (m_pTxn)
                   SafeArrayDestroy(m vTxn.parray);
                                                                                           throw new CCOMERR( hr );
                                                                                 memcpy(m_pTxn, (void
         ReleaseInterface(m_pNewOrder);
                                                                        *)vTxn out.parray->pvData,vTxn out.parray->rgsabound[0].cElements);
          if (!m_bSinglePool)
                                                                                 SafeArrayDestroy(vTxn_out.parray);
                                                                                 if ( m_pTxn->ErrorType != ERR_SUCCESS )
                   ReleaseInterface(m pPayment);
                                                                                           throw new CCOMERR( m_pTxn->ErrorType,
                   ReleaseInterface(m_pStockLevel);
                   ReleaseInterface(m pOrderStatus);
                                                                       m pTxn->error);
          CoUninitialize();
                                                                        tpcc com.h
void CTPCC_COM::NewOrder()
                                                                                 FILE:
                                                                                                     TPCC COM.H
          VARIANT vTxn_out;
                                                                                                               Microsoft TPC-C Kit Ver.
                                                                       4.20.000
         HRESULT hr = m pNewOrder->NewOrder(m_vTxn, &vTxn_out);
                                                                                                              Copyright Microsoft, 1999
          if (FAILED(hr))
                                                                                 All Rights Reserved
                   throw new CCOMERR( hr );
          memcpy(m_pTxn, (void
                                                                                                              not yet audited
*)vTxn_out.parray->pvData,vTxn_out.parray->rgsabound[0].cElements);
         SafeArrayDestroy(vTxn_out.parray);
                                                                                 PURPOSE:
                                                                                                     Header file for TPC-C COM+ class
                                                                       implementation.
         if ( m_pTxn->ErrorType != ERR SUCCESS )
                   throw new CCOMERR( m_pTxn->ErrorType,
                                                                          Change history:
m_pTxn->error );
                                                                                           4.20.000 - first version
```

```
*/
                                                                                             BOOL m_bSinglePool;
                                                                                             // COM Interface pointers
#pragma once
                                                                                             ITPCC*
                                                                                                                            m_pNewOrder;
#include <stdio.h>
                                                                                             ITPCC*
                                                                                                                            m_pPayment;
#include "..\..\tpcc com ps\src\tpcc com ps.h"
                                                                                             ITPCC*
                                                                                                                            m pStockLevel;
                                                                                             ITPCC*
                                                                                                                            m pOrderStatus;
// need to declare functions for import, unless define has already been created
// by the DLL's .cpp module for export.
                                                                                             struct COM_DATA
#ifndef DllDecl
#define DllDecl __declspec( dllimport )
                                                                                                       int ErrorType;
#endif
                                                                                                       int error;
                                                                                                       union
class CCOMERR: public CBaseErr
                                                                                                                 NEW_ORDER_DATA
          private:
                                                                         NewOrder;
                    char m szErrorText[64];
                                                                                                                 PAYMENT_DATA
                                                                         Payment;
          public:
                                                                                                                 DELIVERY_DATA
                    // use this interface for genuine COM errors
                                                                         Delivery;
                    CCOMERR( HRESULT hr )
                                                                                                                 STOCK_LEVEL_DATA
                                                                         StockLevel;
                    {
                              m hr = hr;
                                                                                                                  ORDER_STATUS_DATA
                              m iErrorType = 0;
                                                                         OrderStatus;
                              m_iError = 0;
                                                                                                       } u;
                                                                                             } *m_pTxn;
                    // use this interface to impersonate a non-COM error type
                                                                                             VARIANT m_vTxn;
                    CCOMERR( int iErrorType, int iError )
                                                                                   public:
                                                                                             CTPCC_COM(BOOL bSinglePool);
                              m iErrorType = iErrorType;
                                                                                             ~CTPCC COM(void);
                              m_iError = iError;
                              m_hr = S_OK;
                                                                                             inline PNEW_ORDER_DATA
                                                                         BuffAddr NewOrder()
                                                                                                                  { return &m pTxn->u.NewOrder;
                    }
                                                                                             inline PPAYMENT DATA
                    int
                                        m hr;
                                                                         BuffAddr_Payment()
                                                                                                        { return &m_pTxn->u.Payment; };
                    int
                                        m_iErrorType;
                                                                                             inline PDELIVERY DATA
                                        m iError;
                    int
                                                                         BuffAddr_Delivery()
                                                                                                       { return &m_pTxn->u.Delivery; };
                    // A CCOMERR class can impersonate another class,
                                                                                             inline PSTOCK_LEVEL_DATA BuffAddr_StockLevel()
which happens if the error
                                                                          { return &m pTxn->u.StockLevel; };
                                                                                             inline PORDER_STATUS_DATA
                    // was not actually a COM Services error, but was simply
transmitted back via COM.
                                                                         BuffAddr OrderStatus()
                                                                                                       { return &m_pTxn->u.OrderStatus; };
                    int ErrorType()
                                                                                             void NewOrder
                                                                                                                            ();
                              if (m_iErrorType == 0)
                                                                                             void Payment
                                                                                                                            ();
                                        return ERR TYPE COM;
                                                                                             void StockLevel
                                                                                                                            ();
                              else
                                                                                             void OrderStatus
                                                                                             void Delivery
                                        return m_iErrorType;
                                                                                                                            () { throw new
                                                                         CCOMERR(E_NOTIMPL); } // not supported
                    int ErrorNum() {return m hr;}
                    char *ErrorText()
                                                                         inline void ReleaseInterface(IUnknown *pUnk)
                              if (m_hr == S OK)
                                                                                   if (pUnk)
                                        sprintf( m szErrorText, "Error:
                                                                                    {
Class %d, error # %d", m_iErrorType, m_iError);
                                                                                             pUnk->Release();
                                                                                             pUnk = NULL;
                                        sprintf( m_szErrorText, "Error:
COM HRESULT %x", m_hr );
                              return m_szErrorText;
                    }
                                                                         // wrapper routine for class constructor
                                                                         extern "C" __declspec(dllexport) CTPCC_COM* CTPCC_COM_new(BOOL);
class DllDecl CTPCC COM: public CTPCC BASE
                                                                         typedef CTPCC_COM* (TYPE_CTPCC_COM)(BOOL);
          private:
```

```
odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
# Microsoft Developer Studio Project File - Name="tpcc com all" - Package
                                                                           !ELSEIF "$(CFG)" == "tpcc_com_all - Win32 Debug"
# Microsoft Developer Studio Generated Build File, Format Version 6.00
                                                                           # PROP BASE Use MFC 0
# ** DO NOT EDIT **
                                                                           # PROP BASE Use_Debug_Libraries 1
                                                                           # PROP BASE Output Dir "Debug"
# TARGTYPE "Win32 (x86) Dynamic-Link Library" 0x0102
                                                                           # PROP BASE Intermediate Dir "Debug"
                                                                           # PROP BASE Target Dir ""
CFG=tpcc com all - Win32 Debug
                                                                           # PROP Use_MFC 0
!MESSAGE This is not a valid makefile. To build this project using NMAKE,
                                                                           # PROP Use_Debug_Libraries 1
!MESSAGE use the Export Makefile command and run
                                                                           # PROP Output Dir ".\bin"
!MESSAGE
                                                                           # PROP Intermediate Dir ".\obj"
!MESSAGE NMAKE /f "tpcc com all.mak".
                                                                           # PROP Ignore_Export_Lib 0
!MESSAGE
                                                                           # PROP Target Dir '
!MESSAGE You can specify a configuration when running NMAKE
                                                                           # ADD BASE CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /D "WIN32" /D
!MESSAGE by defining the macro CFG on the command line. For example:
                                                                             DEBUG" /D "_WINDOWS" /YX /FD /c
                                                                           #ADD CPP /nologo /MTd /W3 /Gm /GX /ZI /Od /D "WIN32" /D "_DEBUG"
!MESSAGE\ NMAKE\ /f\ "tpcc\_com\_all.mak"\ CFG="tpcc\_com\_all\ -\ Win32
                                                                           /D " WINDOWS" /YX /FD /c
Debug"
                                                                           # ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32 # ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32 # ADD BASE RSC /I 0x409 /d "_DEBUG"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
                                                                           # ADD RSC /l 0x409 /d " DEBUG"
!MESSAGE "tpcc_com_all - Win32 Release" (based on "Win32 (x86)
                                                                           BSC32=bscmake.exe
Dynamic-Link Library")
                                                                           # ADD BASE BSC32 /nologo
!MESSAGE "tpcc_com_all - Win32 Debug" (based on "Win32 (x86)
                                                                           # ADD BSC32 /nologo
Dynamic-Link Library")
                                                                           LINK32=link.exe
!MESSAGE
                                                                           # ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
                                                                           comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib
# Begin Project
                                                                           odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
# PROP AllowPerConfigDependencies 0
                                                                           /pdbtype:sept
# PROP Scc ProjName '
                                                                           # ADD LINK32 ..\db dblib dll\bin\tpcc dblib.lib
# PROP Scc_LocalPath ""
                                                                           ..\db odbc dll\bin\tpcc odbc.lib kernel32.lib user32.lib gdi32.lib winspool.lib
CPP=cl.exe
                                                                           comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib
MTL=midl.exe
                                                                           odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
RSC=rc.exe
                                                                           /pdbtype:sept
!IF "$(CFG)" == "tpcc_com_all - Win32 Release"
                                                                           !ENDIF
# PROP BASE Use_MFC 0
                                                                           # Begin Target
# PROP BASE Use Debug Libraries 0
# PROP BASE Output Dir "Release"
                                                                           # Name "tpcc com all - Win32 Release"
# PROP BASE Intermediate Dir "Release"
                                                                           # Name "tpcc_com_all - Win32 Debug"
# PROP BASE Target_Dir "
                                                                           # Begin Group "Source"
# PROP Use MFC 0
# PROP Use_Debug_Libraries 0
                                                                           # PROP Default_Filter "*.cpp, *.c"
# PROP Output_Dir ".\bin"
                                                                           # Begin Source File
# PROP Intermediate Dir ".\obi"
# PROP Ignore Export Lib 0
                                                                           SOURCE=.\src\tpcc com all.cpp
# PROP Target Dir "
                                                                           # SUBTRACT CPP /YX
# ADD BASE CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D
                                                                           # End Source File
" WINDOWS" /YX /FD /c
                                                                           # Begin Source File
# ADD CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D
" WINDOWS" /YX /FD /c
                                                                           SOURCE=.\src\tpcc com all.def
# ADD BASE MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
                                                                           # End Source File
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
                                                                           # Begin Source File
# ADD BASE RSC /I 0x409 /d "NDEBUG"
# ADD RSC /I 0x409 /d "NDEBUG"
                                                                           SOURCE=.\src\tpcc com all.idl
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
                                                                           !IF "$(CFG)" == "tpcc com all - Win32 Release"
# ADD BSC32 /nologo
LINK32=link.exe
                                                                           # PROP Ignore Default Tool 1
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
                                                                           # Begin Custom Build - Performing MIDL step
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib
                                                                           InputPath=.\src\tpcc_com_all.idl
odbccp32.lib /nologo /subsystem:windows /dll /machine:1386
# ADD LINK32 ..\db dblib dll\bin\tpcc dblib.lib
```

tpcc\_com\_all.dsp

BuildCmds=\

..\db\_odbc\_dll\bin\tpcc\_odbc.lib kernel32.lib user32.lib gdi32.lib winspool.lib

comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib

```
PRIVATE
          midl /Oicf /h "tpcc_com_all.h" /iid "tpcc_com_all_i.c"
                                                                                    DllUnregisterServer
                                                                                                                  (a),5
".\src\tpcc com all.idl" /out ".\src"
".\src\tpcc_com_all.tlb": $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
 $(BuildCmds)
                                                                          tpcc com ps.h
".\src\tpcc com all.h": $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
 $(BuildCmds)
                                                                          #pragma warning( disable: 4049 ) /* more than 64k source lines */
".\src\tpcc com all i.c": $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
 $(BuildCmds)
                                                                          /* this ALWAYS GENERATED file contains the definitions for the interfaces
# End Custom Build
!ELSEIF "$(CFG)" == "tpcc_com_all - Win32 Debug"
                                                                          /* File created by MIDL compiler version 5.03.0280 */
# PROP Ignore Default Tool 1
                                                                          /* at Sat Apr 08 16:40:10 2000
# Begin Custom Build - Performing MIDL step
InputPath=.\src\tpcc_com_all.idl
                                                                          /* Compiler settings for .\src\tpcc_com_ps.idl:
                                                                            Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
BuildCmds=\
                                                                            error checks: allocation ref bounds_check enum stub_data
          midl /Oicf /h "tpcc_com_all.h" /iid "tpcc_com_all_i.c"
                                                                            VC declspec() decoration level:
".\src\tpcc com all.idl" /out ".\src"
                                                                                 declspec(uuid()), declspec(selectany), declspec(novtable)
                                                                               DECLSPEC_UUID(), MIDL_INTERFACE()
".\src\tpcc com all.tlb": $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
 $(BuildCmds)
                                                                          //@@MIDL FILE HEADING()
".\src\tpcc com all.h": $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
 $(BuildCmds)
                                                                          /* verify that the <rpcndr.h> version is high enough to compile this file*/
                                                                          #ifndef REQUIRED RPCNDR H VERSION
".\src\tpcc_com_all_i.c": $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
                                                                          #define REQUIRED_RPCNDR_H_VERSION 440
 $(BuildCmds)
                                                                          #endif
# End Custom Build
                                                                          #include "rpc.h"
!ENDIF
                                                                          #include "rpcndr.h"
# End Source File
                                                                          #ifndef RPCNDR H VERSION
# End Group
                                                                          #error this stub requires an updated version of <rpcndr.h>
# Begin Group "Header"
                                                                          #endif // __RPCNDR_H_VERSION__
# PROP Default Filter "*.h"
                                                                          #ifndef COM NO WINDOWS H
# Begin Source File
                                                                          #include "windows.h"
                                                                          #include "ole2.h"
SOURCE = . \label{eq:source} SOURCE = . \label{eq:source}
                                                                          #endif/*COM NO WINDOWS H*/
# End Source File
# Begin Source File
                                                                          #ifndef tpcc com ps h
                                                                          #define __tpcc_com_ps_h__
SOURCE=.\src\resource.h
# End Source File
                                                                          /* Forward Declarations */
# End Group
# Begin Source File
                                                                          #ifndef __ITPCC_FWD_DEFINED_
                                                                          #define __ITPCC_FWD_DEFINED_
SOURCE=.\src\tpcc com all.rc
                                                                          typedef interface ITPCC ITPCC;
# End Source File
                                                                                   /* ITPCC FWD DEFINED */
                                                                          #endif
# End Target
# End Project
                                                                          /* header files for imported files */
                                                                          #include "oaidl.h"
                                                                          #include "ocidl.h"
tpcc com ps.def
                                                                          #ifdef __cplusplus
LIBRARY
             "tpcc_com_ps"
                                                                          extern "C" {
                                                                          #endif
DESCRIPTION 'Proxy/Stub DLL'
                                                                          void RPC FAR * RPC USER MIDL user allocate(size t);
EXPORTS
                                                                          void __RPC_USER MIDL_user_free( void __RPC_FAR * );
          DllGetClassObject
                              @1
                                        PRIVATE
          DllCanUnloadNow
                                        PRIVATE
                                @2
                                                                          /* interface __MIDL_itf_tpcc_com_ps_0000 */
          GetProxyDllInfo
                              @3
                                        PRIVATE
                                                                          /* [local] */
          DllRegisterServer
                                                  PRIVATE
                                        (a)4
```

```
ITPCC __RPC_FAR * This,
                                                                              /* [in] */VARIANT txn_in,
                                                                              /* [out] */ VARIANT __RPC_FAR *txn_out);
extern RPC IF HANDLE MIDL itf tpcc com ps 0000 v0 0 c ifspec;
extern RPC IF HANDLE MIDL itf tpcc com ps 0000 v0 0 s ifspec;
                                                                            HRESULT ( stdcall RPC FAR *Delivery )(
                                                                              ITPCC __RPC_FAR * This,
#ifndef ITPCC INTERFACE DEFINED
                                                                              /* [in] */ VARIANT txn in,
#define ITPCC INTERFACE DEFINED
                                                                              /* [out] */ VARIANT RPC FAR *txn out);
/* interface ITPCC */
                                                                            HRESULT ( __stdcall __RPC_FAR *StockLevel )(
                                                                              ITPCC __RPC_FAR * This,
/* [unique][helpstring][uuid][oleautomation][object] */
                                                                              /* [in] */ VARIANT txn in,
                                                                              /* [out] */ VARIANT __RPC_FAR *txn_out);
EXTERN C const IID IID ITPCC;
                                                                            HRESULT ( __stdcall __RPC_FAR *OrderStatus )(
                                                                              ITPCC __RPC_FAR * This, /* [in] */ VARIANT txn_in,
#if defined( cplusplus) && !defined(CINTERFACE)
  MIDL INTERFACE("FEEE6AA2-84B1-11d2-BA47-00C04FBFE08B")
                                                                              /* [out] */ VARIANT __RPC_FAR *txn_out);
  ITPCC: public IUnknown
                                                                            HRESULT ( __stdcall __RPC_FAR *CallSetComplete )(
                                                                              ITPCC __RPC_FAR * This);
  public:
    virtual HRESULT __stdcall NewOrder(
      /* [in] */ VARIANT txn in,
                                                                            END INTERFACE
      /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;
                                                                          } ITPCCVtbl;
    virtual HRESULT stdcall Payment(
                                                                          interface ITPCC
      /* [in] */ VARIANT txn_in,
      /* [out] */ VARIANT RPC FAR *txn out) = 0;
                                                                            CONST VTBL struct ITPCCVtbl RPC FAR *lpVtbl;
    virtual HRESULT __stdcall Delivery(
      /* [in] */ VARIANT txn_in,
      /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;
                                                                        #ifdef COBJMACROS
    virtual HRESULT __stdcall StockLevel(
      /* [in] */ VARIANT txn in,
      /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;
                                                                        #define ITPCC_QueryInterface(This,riid,ppvObject)
                                                                          (This)->lpVtbl -> QueryInterface(This,riid,ppvObject)
    virtual HRESULT __stdcall OrderStatus(
      /* [in] */ VARIANT txn in,
                                                                        #define ITPCC AddRef(This)
      /* [out] */ VARIANT RPC FAR *txn out) = 0;
                                                                          (This)->lpVtbl -> AddRef(This)
    virtual HRESULT stdcall CallSetComplete(void) = 0;
                                                                        #define ITPCC Release(This)
                                                                          (This)->lpVtbl -> Release(This)
  };
#else
         /* C style interface */
                                                                        #define ITPCC NewOrder(This,txn in,txn out)
                                                                          (This)->lpVtbl -> NewOrder(This,txn in,txn out)
  typedef struct ITPCCVtbl
                                                                        #define ITPCC Payment(This,txn in,txn out)
                                                                          (This)->lpVtbl -> Payment(This,txn_in,txn_out)
    BEGIN_INTERFACE
    HRESULT (STDMETHODCALLTYPE __RPC_FAR *QueryInterface)(
                                                                        #define ITPCC_Delivery(This,txn_in,txn_out)
      ITPCC __RPC_FAR * This,
                                                                          (This)->lpVtbl -> Delivery(This,txn in,txn out)
      /* [in] */ REFIID riid,
      /* [iid_is][out] */ void __RPC_FAR *__RPC_FAR *ppvObject);
                                                                        #define ITPCC_StockLevel(This,txn_in,txn_out)
                                                                          (This)->lpVtbl -> StockLevel(This,txn in,txn out)
    ULONG (STDMETHODCALLTYPE __RPC_FAR *AddRef)(
      ITPCC RPC FAR * This);
                                                                        #define ITPCC OrderStatus(This,txn in,txn out)
                                                                          (This)->lpVtbl -> OrderStatus(This,txn_in,txn_out)
    ULONG (STDMETHODCALLTYPE RPC FAR *Release)(
      ITPCC RPC FAR * This);
                                                                        #define ITPCC CallSetComplete(This)
                                                                          (This)->lpVtbl -> CallSetComplete(This)
    HRESULT (__stdcall __RPC_FAR *NewOrder )(
      ITPCC RPC FAR * This,
                                                                        #endif /* COBJMACROS */
      /* [in] */ VARIANT txn in,
      /* [out] */ VARIANT __RPC_FAR *txn_out);
                                                                        #endif
                                                                                 /* C style interface */
```

HRESULT ( stdcall RPC FAR \*Payment )(

```
HRESULT __stdcall ITPCC_NewOrder_Proxy(
  ITPCC RPC FAR * This,
  /* [in] */ VARIANT txn in,
  /* [out] */ VARIANT RPC FAR *txn out);
void RPC STUB ITPCC NewOrder Stub(
  IRpcStubBuffer *This,
  IRpc Channel Buffer * \_pRpc Channel Buffer,\\
  PRPC MESSAGE pRpcMessage,
  DWORD *_pdwStubPhase);
HRESULT __stdcall ITPCC_Payment_Proxy( ITPCC __RPC_FAR * This,
  /* [in] */ VARIANT txn in,
  /* [out] */ VARIANT RPC FAR *txn out);
void __RPC_STUB ITPCC_Payment_Stub(
  IRpcStubBuffer *This,
  IRpcChannelBuffer *_pRpcChannelBuffer,
  PRPC_MESSAGE _pRpcMessage,
  DWORD * pdwStubPhase);
HRESULT __stdcall ITPCC_Delivery_Proxy(
  ITPCC __RPC_FAR * This,
  /* [in] */ VARIANT txn_in,
  /* [out] */ VARIANT __RPC_FAR *txn_out);
void RPC STUB ITPCC Delivery Stub(
  IRpcStubBuffer *This,
  IRpcChannelBuffer * pRpcChannelBuffer,
  PRPC_MESSAGE _pRpcMessage,
  DWORD *_pdwStubPhase);
HRESULT stdcall ITPCC StockLevel Proxy(
  ITPCC __RPC_FAR * This,
  /* [in] */ VARIANT txn in,
  /* [out] */ VARIANT __RPC_FAR *txn_out);
void __RPC_STUB ITPCC_StockLevel_Stub(
  IRpcStubBuffer *This,
  IRpcChannelBuffer *_pRpcChannelBuffer, PRPC_MESSAGE _pRpcMessage,
  DWORD *_pdwStubPhase);
HRESULT stdcall ITPCC_OrderStatus_Proxy(
  ITPCC RPC FAR * This,
  /* [in] */ VARIANT txn_in,
  /* [out] */ VARIANT RPC FAR *txn out);
void RPC STUB ITPCC OrderStatus Stub(
  IRpcStubBuffer *This,
  IRpcChannelBuffer *_pRpcChannelBuffer, PRPC_MESSAGE _pRpcMessage,
  DWORD * pdwStubPhase);
```

```
HRESULT stdcall ITPCC CallSetComplete Proxy(
  ITPCC RPC FAR * This);
void __RPC_STUB ITPCC_CallSetComplete_Stub(
  IRpcStubBuffer *This,
  IRpcChannelBuffer *_pRpcChannelBuffer,
  PRPC_MESSAGE _pRpcMessage,
  DWORD * pdwStubPhase);
#endif
        /* ITPCC INTERFACE DEFINED */
/* Additional Prototypes for ALL interfaces */
unsigned long
                  _RPC_USER_VARIANT_UserSize( unsigned long
  RPC FAR *, unsigned long
                             , VARIANT RPC FAR * );
unsigned char __RPC_FAR * __RPC_USER VARIANT_UserMarshal(
unsigned long RPC_FAR *, unsigned char RPC_FAR *, VARIANT
 RPC FAR * );
unsigned char RPC FAR * RPC USER
VARIANT_UserUnmarshal(unsigned long __RPC_FAR *, unsigned char
 _RPC_FAR *, VARIANT __RPC_FAR * );
 /* end of Additional Prototypes */
#ifdef cplusplus
#endif
#endif
tpcc com ps.idl
        FILE:
                         ITPCC IDL
                                  Microsoft TPC-C Kit Ver.
4.20.000
```

```
Copyright Microsoft, 1999
          All Rights Reserved
                                          not yet audited
          PURPOSE:
                                Defines the interface used by TPCC. This
interface can be implemented by C++ components.
* Change history:
                     4.20.000 - first version
// Forward declare all types defined
interface ITPCC;
import "oaidl.idl";
import "ocidl.idl";
                     object,
                     oleautomation,
                     uuid(FEEE6AA2-84B1-11d2-BA47-00C04FBFE08B),
                     helpstring("ITPCC Interface"),
                     pointer_default(unique)
          interface ITPCC: IUnknown
```

```
//@@MIDL_FILE_HEADING( )
    HRESULT stdcall NewOrder
                                                                          #if !defined( M IA64) && !defined( M AXP64)
                                                             [in]
VARIANT txn_in,
                                                                          #ifdef __cplusplus
                                                                          extern "C" {
                                                             [out]
                                                                          #endif
VARIANT *txn out
                                                             );
                                                                          #include <rpc.h>
    HRESULT _stdcall Payment
                                                                          #include <rpendr.h>
                                                             [in]
VARIANT txn in,
                                                                          #ifdef MIDL USE GUIDDEF
                                                             [out]
                                                                          #ifndef INITGUID
VARIANT *txn_out
                                                             );
                                                                          #define INITGUID
                                                                          #include <guiddef.h>
    HRESULT _stdcall Delivery
                                                                          #undef INITGUID
                                                                          #else
                                                             [in]
                                                                          #include <guiddef.h>
VARIANT txn_in,
                                                                          #endif
                                                             [out]
VARIANT *txn_out
                                                                          #define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
                                                                               DEFINE GUID(name,1,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)
                                                             );
                                                                          #else // !_MIDL_USE_GUIDDEF_
    HRESULT _stdcall StockLevel
                                                             [in]
                                                                          #ifndef __IID_DEFINED
VARIANT txn in,
                                                                          #define IID DEFINED
                                                             [out]
VARIANT *txn out
                                                                          typedef struct IID
                                                             );
                                                                             unsigned long x;
    HRESULT stdcall OrderStatus
                                                                            unsigned short s1;
                                                                            unsigned short s2;
                                                                            unsigned char c[8];
VARIANT txn_in,
                                                                          } IID;
                                                             [out]
VARIANT *txn_out
                                                                          #endif // __IID_DEFINED__
                                                             );
                                                                          #ifndef CLSID DEFINED
                                                                          #define CLSID DEFINED
    HRESULT _stdcall CallSetComplete
                                                                          typedef IID CLSID;
                                                                          #endif // CLSID_DEFINED
                                                             ):
                                                                          \# define\ MIDL\_DEFINE\_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \ \setminus \\
          // interface ITPCC
  }:
                                                                               const type name = \{\bar{l}, w1, w2, \{b1, b2, b3, b4, b5, b6, b7, b8\}\}
                                                                          #endif!_MIDL_USE_GUIDDEF_
tpcc com ps i.c
                                                                          MIDL DEFINE GUID(IID,
#pragma warning( disable: 4049 ) /* more than 64k source lines */
                                                                          IID ITPCC,0xFEEE6AA2,0x84B1,0x11d2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,
                                                                          0xE0,0x8B);
/* this ALWAYS GENERATED file contains the IIDs and CLSIDs */
                                                                          #undef MIDL DEFINE GUID
/* link this file in with the server and any clients */
                                                                          #ifdef __cplusplus
/* File created by MIDL compiler version 5.03.0280 */
                                                                          #endif
/* at Sat Apr 08 16:40:10 2000
/* Compiler settings for .\src\tpcc_com_ps.idl:
  Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms ext, c ext
                                                                          #endif /* !defined(_M_IA64) && !defined(_M_AXP64)*/
  error checks: allocation ref bounds_check enum stub_data
  VC declspec() decoration level:
       declspec(uuid()), __declspec(selectany), __declspec(novtable)
                                                                          #pragma warning( disable: 4049 ) /* more than 64k source lines */
     DECLSPEC UUID(), MIDL INTERFACE()
                                                                           /* this ALWAYS GENERATED file contains the IIDs and CLSIDs */
```

```
#undef MIDL DEFINE GUID
/* link this file in with the server and any clients */
                                                                                                                          #ifdef __cplusplus
/* File created by MIDL compiler version 5.03.0280 */
/* at Sat Apr 08 16:40:10 2000
                                                                                                                          #endif
*/
/* Compiler settings for .\src\tpcc com ps.idl:
   Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run, appending), ms ext, c ext,
                                                                                                                          #endif /* defined( M IA64) || defined( M AXP64)*/
   error checks: allocation ref bounds_check enum stub_data
           declspec() decoration level:
           declspec(uuid()), declspec(selectany),
                                                                          declspec(novtable)
                                                                                                                          tpcc com ps p.c
        DECLSPEC_UUID(), MIDL_INTERFACE()
                                                                                                                          #pragma warning( disable: 4049 ) /* more than 64k source lines */
//@@MIDL FILE HEADING()
                                                                                                                          /* this ALWAYS GENERATED file contains the proxy stub code */
#if defined(_M_IA64) || defined(_M_AXP64)
#ifdef cplusplus
                                                                                                                           /* File created by MIDL compiler version 5.03.0280 */
extern "C" {
                                                                                                                          /* at Sat Apr 08 16:40:10 2000
#endif
                                                                                                                          /* Compiler settings for .\src\tpcc com ps.idl:
                                                                                                                             Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
#include <rpc.h>
                                                                                                                             error checks: allocation ref bounds check enum stub data
#include <rpcndr.h>
                                                                                                                                     __declspec() decoration level:
                                                                                                                                  __declspec(uuid()), __declspec(selectany), __
                                                                                                                                                                                                    declspec(novtable)
#ifdef _MIDL_USE_GUIDDEF_
#ifndef INITGUID
                                                                                                                          //@@MIDL FILE HEADING()
#define INITGUID
#include <guiddef.h>
                                                                                                                          #if !defined( M IA64) && !defined( M AXP64)
#undef INITGUID
                                                                                                                          #define USE_STUBLESS_PROXY
#else
#include <guiddef.h>
#endif
                                                                                                                          /* verify that the <rpcproxy.h> version is high enough to compile this file*/
                                                                                                                          #ifndef __REDQ_RPCPROXY_H_VERSION
#define MIDL DEFINE GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
                                                                                                                          #define REQUIRED_RPCPROXY_H_VERSION 440
       DEFINE_GUID(name,1,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)
                                                                                                                          #endif
#else //! MIDL USE GUIDDEF
                                                                                                                          #include "rpcproxy.h"
#ifndef IID DEFINED
                                                                                                                          #ifndef RPCPROXY H VERSION
#define __IID_DEFINED__
                                                                                                                          #error this stub requires an updated version of <rpcproxy.h>
                                                                                                                          #endif // RPCPROXY H VERSION
typedef struct _IID
   unsigned long x;
                                                                                                                          #include "tpcc com ps.h"
   unsigned short s1;
   unsigned short s2;
                                                                                                                          #define TYPE_FORMAT_STRING_SIZE 997
   unsigned char c[8];
                                                                                                                          #define PROC_FORMAT_STRING_SIZE 193
} IID;
                                                                                                                          #define TRANSMIT AS TABLE SIZE 0
                                                                                                                          #define WIRE_MARSHAL_TABLE_SIZE 1
#endif // IID DEFINED
                                                                                                                          typedef struct _MIDL_TYPE_FORMAT_STRING
#ifndef CLSID DEFINED
#define CLSID DEFINED
typedef IID CLSID;
                                                                                                                             unsigned char Format[ TYPE_FORMAT_STRING_SIZE ];
#endif // CLSID DEFINED
                                                                                                                              } MIDL TYPE FORMAT STRING;
#define MIDL DEFINE GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
                                                                                                                          typedef struct _MIDL_PROC_FORMAT_STRING
       const type name = \{1,w1,w2,\{b1,b2,b3,b4,b5,b6,b7,b8\}\}
                                                                                                                              short
                                                                                                                                              Pad:
#endif!_MIDL_USE_GUIDDEF_
                                                                                                                              unsigned char Format[ PROC FORMAT STRING SIZE ];
                                                                                                                              } MIDL_PROC_FORMAT_STRING;
MIDL DEFINE GUID(IID,
IID_ITPCC,0xFEEE6AA2,0x84B1,0x11d2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,
0xE0,0x8B);
                                                                                                                         extern const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString;
```

```
(void *)-1 /* ITPCC::Delivery */,
extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;
                                                                                                                                     (void *)-1 /* ITPCC::StockLevel */,
                                                                                                                                     (void *)-1 /* ITPCC::OrderStatus */,
/* Standard interface: __MIDL_itf_tpcc_com_ps_0000, ver. 0.0,
                                                                                                                                     (void *)-1 /* ITPCC::CallSetComplete */
const\ CInterfaceStubVtbl\ \ ITPCCStubVtbl =
x00}} */
                                                                                                                                     &IID ITPCC,
                                                                                                                                     &ITPCC ServerInfo,
/* Object interface: IUnknown, ver. 0.0,
0, /* pure interpreted */
0x46}} */
                                                                                                                                    CStdStubBuffer METHODS
/* Object interface: ITPCC, ver. 0.0,
                                                                                                                                extern const USER MARSHAL ROUTINE QUADRUPLE
                                                                                                                                UserMarshalRoutines[ WIRE MARSHAL TABLE SIZE ];
GUID = \{0xFEEE6AA2, 0x84B1, 0x11d2, \{0xBA, 0x47, 0x00, 0xC0, 0x4F, 0xBF, 0xB
E0,0x8B}} */
                                                                                                                                static const MIDL_STUB_DESC Object_StubDesc =
                                                                                                                                    Ò.
extern const MIDL STUB DESC Object StubDesc;
                                                                                                                                     NdrOleAllocate,
                                                                                                                                     NdrOleFree,
                                                                                                                                    0.
extern const MIDL_SERVER_INFO ITPCC_ServerInfo;
                                                                                                                                    0,
                                                                                                                                    0.
#pragma code seg(".orpc")
                                                                                                                                    0,
static const unsigned short ITPCC_FormatStringOffsetTable[] =
                                                                                                                                       MIDL TypeFormatString.Format,
                                                                                                                                     1, /* -error bounds_check flag */
   0,
   34,
                                                                                                                                     0x20000, /* Ndr library version */
   68,
   102
                                                                                                                                    0x5030118, /* MIDL Version 5.3.280 */
   170
                                                                                                                                    UserMarshalRoutines,
                                                                                                                                     0, /* notify & notify_flag routine table */
   };
                                                                                                                                    0x1, /* MIDL flag */
static const MIDL SERVER INFO ITPCC ServerInfo =
                                                                                                                                    0, /* Reserved3 */
                                                                                                                                    0, /* Reserved4 */
   &Object_StubDesc,
                                                                                                                                    0 /* Reserved5 */
   0,
       MIDL ProcFormatString.Format,
   &ITPCC FormatStringOffsetTable[-3],
                                                                                                                                #pragma data seg(".rdata")
                                                                                                                                static const USER MARSHAL ROUTINE QUADRUPLE
   0,
                                                                                                                                UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ] =
   0,
   0
static const MIDL STUBLESS PROXY INFO ITPCC ProxyInfo =
                                                                                                                                             VARIANT UserSize
                                                                                                                                             ,VARIANT UserMarshal
                                                                                                                                             ,VARIANT UserUnmarshal
    &Object StubDesc,
       MIDL_ProcFormatString.Format,
                                                                                                                                             ,VARIANT_UserFree
    &ITPCC FormatStringOffsetTable[-3],
   0,
                                                                                                                                        };
   0
   };
                                                                                                                                #if !defined( RPC WIN32 )
CINTERFACE_PROXY_VTABLE(9) _ITPCCProxyVtbl =
                                                                                                                                #error Invalid build platform for this stub.
                                                                                                                                #endif
   &ITPCC ProxyInfo,
   &IID ITPCC,
                                                                                                                                #if!(TARGET IS NT40 OR LATER)
   IUnknown_QueryInterface_Proxy,
                                                                                                                                #error You need a Windows NT 4.0 or later to run this stub because it uses
   IUnknown_AddRef_Proxy,
                                                                                                                                these features:
   IUnknown Release Proxy,
                                                                                                                                #error -Oif or -Oicf, [wire marshal] or [user marshal] attribute.
   (void *)-1 /* ITPCC::NewOrder */,
                                                                                                                                #error However, your C/C++ compilation flags indicate you intend to run this
   (void *)-1 /* ITPCC::Payment */,
                                                                                                                                app on earlier systems.
```

```
#error This app will die there with the RPC_X_WRONG_STUB_VERSION
                                                                                         NdrFcShort( 0x14 ), /* x86 Stack size/offset = 20 */
                                                                               /* 24 */
error.
                                                                               #else
#endif
                                                                                                               NdrFcShort( 0x18 ), /* MIPS Stack
                                                                               size/offset = 24 */
                                                                               #endif
static const MIDL PROC FORMAT STRING MIDL ProcFormatString =
                                                                               #else
                                                                                                               NdrFcShort( 0x18 ), /* PPC Stack size/offset
    0,
                                                                               = 24 */
                                                                               #endif
                                                                               #else
          /* Procedure NewOrder */
                                                                                                               NdrFcShort(0x18), /* Alpha Stack
                                                                               size/offset = 24 */
                                0x33,
                                                                               #endif
FC_AUTO_HANDLE */
                                                                               /* 26 */
                                                                                         NdrFcShort( 0x3da ), /* Type Offset=986 */
                                                     /* Old Flags: object,
                                0x6c,
Oi2 */
                                                                                         /* Return value */
/* 2 */
          NdrFcLong( 0x0),
                                /* 0 */
/* 6 */
                                                                                         NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
          NdrFcShort(0x3),
                                /* 3 */
                                                                               /* 28 */
#ifndef ALPHA
                                                                               #ifndef ALPHA
#ifndef PPC
                                                                               #ifndef PPC
                                                                               #if !defined(_MIPS )
#if !defined(_MIPS )
/* 8 */
          \overline{\text{NdrFcShort}} (0x1c), /* x86 Stack size/offset = 28 */
                                                                               /* 30 */
                                                                                         \overline{\text{NdrFcShort}} (0x18), /* x86 Stack size/offset = 24 */
#else
                                                                               #else
                                NdrFcShort(0x20), /* MIPS Stack
                                                                                                               NdrFcShort(0x1c), /* MIPS Stack
size/offset = 32 */
                                                                               size/offset = 28 */
#endif
                                                                               #endif
#else
                                                                               #else
                                                                                                               NdrFcShort( 0x1c ), /* PPC Stack size/offset
                                NdrFcShort( 0x20 ), /* PPC Stack size/offset
                                                                               = 28 */
= 32 */
#endif
                                                                               #endif
#else
                                                                               #else
                                NdrFcShort( 0x28 ), /* Alpha Stack
                                                                                                               NdrFcShort( 0x20 ), /* Alpha Stack
size/offset = 40 */
                                                                               size/offset = 32 */
#endif
                                                                               #endif
/* 10 */
          NdrFcShort( 0x0 ),
                                /* 0 */
                                                                               /* 32 */
                                                                                                               /* FC_LONG */
                                                                                         0x8.
/* 12 */
          NdrFcShort( 0x8 ),
                                                                                                                                    /* 0 */
                                                                                                               0x0,
/* 14 */
                                /* Oi2 Flags: srv must size, clt must size, has
          0x7.
return, */
                                                                                         /* Procedure Payment */
                                                     /* 3 */
                                0x3.
                                                                               /* 34 */
                                                                                                               /* FC_AUTO_HANDLE */
                                                                                         0x33
          /* Parameter txn in */
                                                                                                                                    /* Old Flags: object,
                                                                               Oi2 */
/* 16 */
          NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
                                                                               /* 36 */
                                                                                         NdrFcLong( 0x0 ),
                                                                                                               /* 0 */
                                                                               /* 40 */
#ifndef _ALPHA_
                                                                                         NdrFcShort( 0x4 ),
                                                                                                               /* 4 */
#ifndef PPC
                                                                               #ifndef ALPHA
                                                                               #ifndef PPC
#if !defined(_MIPS )
/* 18 */
         NdrFcShort( 0x4 ), /* x86 Stack size/offset = 4 */
                                                                               #if !defined( MIPS )
#else
                                                                               /* 42 */
                                                                                         NdrFcShort(0x1c), /* x86 Stack size/offset = 28 */
                                NdrFcShort( 0x8 ), /* MIPS Stack
                                                                               #else
size/offset = 8 */
                                                                                                               NdrFcShort( 0x20 ), /* MIPS Stack
                                                                               size/offset = 32 */
#endif
#else
                                                                               #endif
                                NdrFcShort( 0x8 ), /* PPC Stack size/offset
                                                                               #else
= 8 */
                                                                                                               NdrFcShort( 0x20 ), /* PPC Stack size/offset
                                                                               = 32 */
#endif
                                                                               #endif
#else
                                NdrFcShort( 0x8 ), /* Alpha Stack
                                                                               #else
size/offset = 8 */
                                                                                                               NdrFcShort( 0x28 ), /* Alpha Stack
#endif
                                                                               size/offset = 40 */
          NdrFcShort( 0x3c8 ), /* Type Offset=968 */
/* 20 */
                                                                               #endif
                                                                               /* 44 */
                                                                                         NdrFcShort( 0x0 ),
                                                                                                               /* 0 */
                                                                               /* 46 */
          /* Parameter txn out */
                                                                                         NdrFcShort(0x8),
                                                                                                               /* 8 */
                                                                               /* 48 */
                                                                                         0x7,
                                                                                                               /* Oi2 Flags: srv must size, clt must size, has
/* 22 */ NdrFcShort( 0x4113 ),
                                          /* Flags: must size, must free, out,
                                                                               return, */
simple ref, srv alloc size=16 */
                                                                                                                                    /* 3 */
                                                                                                               0x3
#ifndef ALPHA
#ifndef _PPC
                                                                                         /* Parameter txn_in */
#if !defined( MIPS )
```

```
/* 50 */ NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
                                                                                         NdrFcLong( 0x0 ),
                                                                               /* 74 */
#ifndef _ALPHA_
                                                                                          NdrFcShort( 0x5 ),
                                                                                                               /* 5 */
#ifndef PPC
                                                                               #ifndef _ALPHA_
                                                                               #ifndef PPC
#if !defined(_MIPS_)
                                                                               #if !defined( MIPS )
/* 52 */
          NdrFcShort( 0x4 ),
                               /* x86 Stack size/offset = 4 */
#else
                                                                               /* 76 */
                                                                                         NdrFcShort(0x1c), /* x86 Stack size/offset = 28 */
                                                                               #else
                                NdrFcShort( 0x8 ), /* MIPS Stack
                                                                                                               NdrFcShort( 0x20 ), /* MIPS Stack
size/offset = 8 */
#endif
                                                                               size/offset = 32 */
#else
                                                                               #endif
                                NdrFcShort( 0x8 ), /* PPC Stack size/offset
                                                                               #else
= 8 * /
                                                                                                               NdrFcShort( 0x20 ), /* PPC Stack size/offset
#endif
                                                                               = 32 */
#else
                                                                               #endif
                                NdrFcShort( 0x8 ), /* Alpha Stack
                                                                               #else
size/offset = 8 */
                                                                                                               NdrFcShort(0x28), /* Alpha Stack
#endif
                                                                               size/offset = 40 */
          NdrFcShort( 0x3c8 ), /* Type Offset=968 */
/* 54 */
                                                                               #endif
                                                                               /* 78 */
                                                                                          NdrFcShort( 0x0 ).
                                                                                                               /* 0 */
           /* Parameter txn out */
                                                                               /* 80 */
                                                                                          NdrFcShort( 0x8 ),
                                                                                                               /* 8 */
                                                                               /* 82 */
                                                                                         0x7,
                                                                                                               /* Oi2 Flags: srv must size, clt must size, has
         NdrFcShort( 0x4113 ),
                                                                               return, */
                                          /* Flags: must size, must free, out,
simple ref, srv alloc size=16 */
                                                                                                               0x3,
                                                                                                                                     /* 3 */
#ifndef ALPHA
#ifndef _PPC
                                                                                          /* Parameter txn_in */
#if !defined( MIPS )
          NdrFcShort( 0x14 ), /* x86 Stack size/offset = 20 */
                                                                               /* 84 */
                                                                                         NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
                                                                               #ifndef _ALPHA_
#else
                                NdrFcShort( 0x18 ), /* MIPS Stack
                                                                               #ifndef PPC
size/offset = 24 */
                                                                               #if !defined(_MIPS )
#endif
                                                                               /* 86 */
                                                                                         NdrFcShort( 0x4 ),
                                                                                                              /* x86 Stack size/offset = 4 */
#else
                                                                               #else
                                NdrFcShort(0x18), /* PPC Stack size/offset
                                                                                                               NdrFcShort( 0x8 ), /* MIPS Stack
= 24 */
                                                                               size/offset = 8 */
#endif
                                                                               #endif
                                                                               #else
#else
                                NdrFcShort(0x18), /* Alpha Stack
                                                                                                               NdrFcShort( 0x8 ), /* PPC Stack size/offset
                                                                               = 8 */
size/offset = 24 */
                                                                               #endif
#endif
/* 60 */
          NdrFcShort( 0x3da ), /* Type Offset=986 */
                                                                               #else
                                                                                                               NdrFcShort( 0x8 ), /* Alpha Stack
           /* Return value */
                                                                               size/offset = 8 */
                                                                               #endif
/* 62 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
                                                                               /* 88 */
                                                                                         NdrFcShort( 0x3c8 ), /* Type Offset=968 */
#ifndef ALPHA
#ifndef PPC
                                                                                          /* Parameter txn_out */
#if !defined( MIPS )
/* 64 */
          NdrFcShort( 0x18 ), /* x86 Stack size/offset = 24 */
                                                                               /* 90 */
                                                                                         NdrFcShort( 0x4113 ),
                                                                                                                          /* Flags: must size, must free, out,
                                                                               simple ref, srv alloc size=16 */
#else
                                                                               #ifndef _ALPHA_
#ifndef _PPC_
                                NdrFcShort( 0x1c ), /* MIPS Stack
size/offset = 28 */
                                                                               #if !defined( MIPS )
#endif
                                                                               /* 92 */
                                                                                         NdrFcShort( 0x14 ), /* x86 Stack size/offset = 20 */
#else
                                NdrFcShort(0x1c), /* PPC Stack size/offset
                                                                               #else
=28 */
                                                                                                               NdrFcShort( 0x18 ), /* MIPS Stack
#endif
                                                                               size/offset = 24 */
                                                                               #endif
#else
                                NdrFcShort( 0x20 ), /* Alpha Stack
                                                                               #else
                                                                                                               NdrFcShort( 0x18 ), /* PPC Stack size/offset
size/offset = 32 */
                                                                               = 24 */
#endif
/* 66 */
          0x8,
                                /* FC LONG */
                                                                               #endif
                                0x0,
                                                      /* 0 */
                                                                               #else
                                                                                                               NdrFcShort( 0x18 ), /* Alpha Stack
           /* Procedure Delivery */
                                                                               size/offset = 24 */
                                                                               #endif
/* 68 */
          0x33,
                                /* FC AUTO HANDLE */
                                                                               /* 94 */
                                                                                         NdrFcShort( 0x3da ), /* Type Offset=986 */
                                0x6c,
                                                      /* Old Flags: object,
Oi2 */
                                                                                          /* Return value */
```

```
#endif
/* 96 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
                                                                              /* 122 */ NdrFcShort( 0x3c8 ), /* Type Offset=968 */
#ifndef _ALPHA_
#ifndef PPC
                                                                                         /* Parameter txn_out */
#if !defined( MIPS )
/* 98 */
          NdrFcShort( 0x18 ), /* x86 Stack size/offset = 24 */
                                                                              /* 124 */ NdrFcShort( 0x4113 ),
                                                                                                                         /* Flags: must size, must free, out,
#else
                                                                              simple ref, srv alloc size=16 */
                                                                              #ifndef _ALPHA_
#ifndef _PPC_
                                NdrFcShort(0x1c), /* MIPS Stack
size/offset = 28 */
#endif
                                                                              #if !defined( MIPS )
#else
                                                                              /* 126 */ NdrFcShort( 0x14 ), /* x86 Stack size/offset = 20 */
                                NdrFcShort(0x1c), /* PPC Stack size/offset
=28 */
                                                                                                              NdrFcShort(0x18), /* MIPS Stack
                                                                              size/offset = 24 */
#endif
#else
                                                                              #endif
                                NdrFcShort( 0x20 ), /* Alpha Stack
                                                                              #else
size/offset = 32 */
                                                                                                              NdrFcShort( 0x18 ), /* PPC Stack size/offset
                                                                              = 24 */
#endif
/* 100 */ 0x8.
                                /* FC LONG */
                                                                              #endif
                                                     /* 0 */
                                                                              #else
                                0x0.
                                                                                                              NdrFcShort(0x18), /* Alpha Stack
          /* Procedure StockLevel */
                                                                              size/offset = 24 */
                                                                              #endif
                                                                              /* 128 */ NdrFcShort( 0x3da ), /* Type Offset=986 */
/* 102 */ 0x33,
                                /* FC AUTO HANDLE */
                                                     /* Old Flags: object,
Oi2 */
                                                                                         /* Return value */
/* 104 */ NdrFcLong( 0x0 ),
                                /* 0 */
/* 108 */ NdrFcShort( 0x6 ),
                                /* 6 */
                                                                              /* 130 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
#ifndef ALPHA
                                                                              #ifndef ALPHA
#ifndef _PPC
                                                                              #ifndef _PPC
#if !defined( MIPS )
                                                                              #if !defined( MIPS )
/* 110 */ NdrFcShort( 0x1c ), /* x86 Stack size/offset = 28 */
                                                                              /* 132 */ NdrFcShort( 0x18 ), /* x86 Stack size/offset = 24 */
                                                                              #else
#else
                                NdrFcShort(0x20), /* MIPS Stack
                                                                                                              NdrFcShort(0x1c), /* MIPS Stack
                                                                              size/offset = 28 */
size/offset = 32 */
#endif
                                                                              #endif
#else
                                                                              #else
                                                                                                              NdrFcShort( 0x1c ), /* PPC Stack size/offset
                                NdrFcShort( 0x20 ), /* PPC Stack size/offset
= 32 */
                                                                              = 28 */
                                                                              #endif
#endif
                                                                              #else
#else
                                NdrFcShort( 0x28 ), /* Alpha Stack
                                                                                                              NdrFcShort( 0x20 ), /* Alpha Stack
size/offset = 40 */
                                                                              size/offset = 32 */
#endif
                                                                              #endif
/* 112 */ NdrFcShort( 0x0 ),
                                /* 0 */
                                                                              /* 134 */ 0x8,
                                                                                                              /* FC LONG */
/* 114 */ NdrFcShort( 0x8 ),
                                                                                                                                    /* 0 */
                                /* 8 */
                                                                                                              0x0.
/* 116 */ 0x7,
                                /* Oi2 Flags: srv must size, clt must size, has
return, */
                                                                                         /* Procedure OrderStatus */
                                0x3,
                                                     /* 3 */
                                                                              /* 136 */ 0x33,
                                                                                                              /* FC AUTO HANDLE */
          /* Parameter txn_in */
                                                                                                              0x6c,
                                                                                                                                    /* Old Flags: object,
                                                                              Oi2 */
                                                                                                             /* 0 */
/* 118 */ NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
                                                                              /* 138 */ NdrFcLong( 0x0 ),
#ifndef _ALPHA_
                                                                              /* 142 */ NdrFcShort( 0x7 ),
                                                                                                             /* 7 */
#ifndef PPC
                                                                              #ifndef ALPHA
                                                                              #ifndef PPC
#if !defined( MIPS )
/* 120 */ NdrFcShort( 0x4 ),
                               /* x86 Stack size/offset = 4 */
                                                                              #if !defined( MIPS )
#else
                                                                              /* 144 */ NdrFcShort( 0x1c ), /* x86 Stack size/offset = 28 */
                                NdrFcShort( 0x8 ), /* MIPS Stack
                                                                              #else
size/offset = 8 */
                                                                                                              NdrFcShort( 0x20 ), /* MIPS Stack
#endif
                                                                              size/offset = 32 */
#else
                                                                              #endif
                                NdrFcShort( 0x8 ), /* PPC Stack size/offset
                                                                              #else
= 8 * /
                                                                                                              NdrFcShort( 0x20 ), /* PPC Stack size/offset
                                                                              = 32 * /
#endif
#else
                                                                              #endif
                                NdrFcShort( 0x8 ), /* Alpha Stack
                                                                              #else
size/offset = 8 */
```

```
NdrFcShort( 0x28 ), /* Alpha Stack
                                                                                                             NdrFcShort( 0x20 ), /* Alpha Stack
size/offset = 40 */
                                                                              size/offset = 32 */
#endif
                                                                              #endif
/* 146 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                              /* 168 */ 0x8,
                                                                                                             /* FC LONG */
/* 148 */ NdrFcShort( 0x8 ),
                               /* 8 */
                                                                                                                                  /* 0 */
                                                                                                             0x0
/* 150 */ 0x7,
                               /* Oi2 Flags: srv must size, clt must size, has
return, */
                                                                                        /* Procedure CallSetComplete */
                                                     /* 3 */
                                                                              /* 170 */ 0x33,
                                                                                                             /* FC AUTO HANDLE */
          /* Parameter txn in */
                                                                                                                                  /* Old Flags: object,
                                                                                                             0x6c.
                                                                              Oi2 */
/* 152 */ NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
                                                                              /* 172 */ NdrFcLong( 0x0 ),
                                                                                                             /* 0 */
#ifndef ALPHA
                                                                              /* 176 */ NdrFcShort( 0x8 ),
                                                                                                             /* 8 */
#ifndef PPC
                                                                             #ifndef _ALPHA_
#if !defined( MIPS )
                                                                              /* 178 */ NdrFcShort( 0x8 ),
                                                                                                             /* x86, MIPS, PPC Stack size/offset = 8 */
/* 154 */ NdrFcShort( 0x4 ), /* x86 Stack size/offset = 4 */
                                                                              #else
                                                                                                             NdrFcShort( 0x10 ), /* Alpha Stack
#else
                               NdrFcShort( 0x8 ), /* MIPS Stack
                                                                              size/offset = 16 */
size/offset = 8 */
                                                                              #endif
#endif
                                                                              /* 180 */ NdrFcShort( 0x0 ),
                                                                                                             /* 0 */
                                                                              /* 182 */ NdrFcShort( 0x8 ),
#else
                                                                                                             /* 8 */
                               NdrFcShort( 0x8 ), /* PPC Stack size/offset
                                                                             /* 184 */ 0x4,
                                                                                                             /* Oi2 Flags: has return, */
= 8 * /
#endif
#else
                                                                                        /* Return value */
                               NdrFcShort( 0x8 ), /* Alpha Stack
size/offset = 8 */
                                                                              /* 186 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
                                                                             #ifndef _ALPHA_
#endif
/* 156 */ NdrFcShort( 0x3c8 ), /* Type Offset=968 */
                                                                              /* 188 */ NdrFcShort( 0x4 ),
                                                                                                            /* x86, MIPS, PPC Stack size/offset = 4 */
                                                                              #else
          /* Parameter txn out */
                                                                                                             NdrFcShort( 0x8 ), /* Alpha Stack
                                                                              size/offset = 8 */
/* 158 */ NdrFcShort( 0x4113 ),
                                          /* Flags: must size, must free, out,
                                                                             #endif
simple ref, srv alloc size=16 */
                                                                              /* 190 */ 0x8,
                                                                                                             /* FC LONG */
#ifndef _ALPHA_
                                                                                                                                  /* 0 */
                                                                                                             0x0.
#ifndef PPC
#if !defined(_MIPS )
                                                                                                             0x0
/* 160 */ NdrFcShort( 0x14 ), /* x86 Stack size/offset = 20 */
                                                                                  }
                                                                                };
#else
                               NdrFcShort( 0x18 ), /* MIPS Stack
size/offset = 24 */
                                                                              static const MIDL TYPE FORMAT STRING MIDL TypeFormatString =
#endif
                                                                                  0,
#else
                               NdrFcShort(0x18), /* PPC Stack size/offset
= 24 */
                                                                                                             NdrFcShort( 0x0 ), /* 0 */
                                                                              /* 2 */
#endif
#else
                                                                                                             0x12, 0x0, /* FC UP */
                               NdrFcShort(0x18), /* Alpha Stack
                                                                              /* 4 */
                                                                                        NdrFcShort( 0x3b0 ), /* Offset= 944 (948) */
                                                                              /* 6 */
size/offset = 24 */
#endif
                                                                                                             0x2b,
/* 162 */ NdrFcShort( 0x3da ), /* Type Offset=986 */
                                                                             FC NON ENCAPSULATED UNION */
                                                                                                             0x9,
                                                                                                                                  /* FC ULONG */
                                                                              /* 8 */
          /* Return value */
                                                                                                             /* Corr desc: FC_USHORT */
                                                                                        0x7.
                                                                                                             0x0
                                                                                        NdrFcShort( 0xfff8 ), /* -8 */
/* 164 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
                                                                              /* 10 */
#ifndef _ALPHA_
                                                                                        NdrFcShort(0x2), /* Offset= 2 (14) */
                                                                              /* 12 */
#ifndef PPC
                                                                              /* 14 */
                                                                                        NdrFcShort( 0x10 ), /* 16 */
#if !defined(_MIPS )
                                                                              /* 16 */
                                                                                        NdrFcShort( 0x2b ), /* 43 */
/* 166 */ NdrFcShort( 0x18 ), /* x86 Stack size/offset = 24 */
                                                                              /* 18 */
                                                                                        NdrFcLong(0x3),
                                                                                                            /* 3 */
                                                                              /* 22 */
#else
                                                                                        NdrFcShort( 0x8008 ),
                                                                                                                        /* Simple arm type: FC_LONG */
                               NdrFcShort(0x1c), /* MIPS Stack
                                                                              /* 24 */
                                                                                        NdrFcLong( 0x11 ), /* 17 */
                                                                              /* 28 */
size/offset = 28 */
                                                                                        NdrFcShort(0x8001),
                                                                                                                        /* Simple arm type: FC BYTE */
#endif
                                                                              /* 30 */
                                                                                        NdrFcLong(0x2),
#else
                                                                              /* 34 */
                                                                                        NdrFcShort( 0x8006 ),
                                                                                                                        /* Simple arm type: FC_SHORT */
                                                                             /* 36 */
                                                                                                            /* 4 */
                               NdrFcShort( 0x1c ), /* PPC Stack size/offset
                                                                                        NdrFcLong( 0x4 ),
= 28 */
                                                                              /* 40 */
                                                                                        NdrFcShort( 0x800a ),
                                                                                                                        /* Simple arm type: FC FLOAT */
                                                                              /* 42 */
                                                                                                             /* 5 */
#endif
                                                                                        NdrFcLong( 0x5 ),
#else
```

```
/* 46 */
                                         NdrFcShort( 0x800c),
                                                                            /* 246 */
*/
                                                                                       NdrFcLong(0x4013),
                                                                                                                      /* 16403 */
/* 48 */
                                                                            /* 250 */
          NdrFcLong( 0xb ),
                              /* 11 */
                                                                                       NdrFcShort( 0x27e ), /* Offset= 638 (888) */
/* 52 */
                                         /* Simple arm type: FC_SHORT */
                                                                            /* 252 */
          NdrFcShort( 0x8006 ),
                                                                                       NdrFcLong(0x4016),
                                                                                                                      /* 16406 */
/* 54 */
          NdrFcLong( 0xa ),
                                                                            /* 256 */
                                                                                       NdrFcShort( 0x278 ), /* Offset= 632 (888) */
/* 58 */
          NdrFcShort( 0x8008),
                                         /* Simple arm type: FC LONG */
                                                                            /* 258 */
                                                                                       NdrFcLong(0x4017),
                                                                                                                      /* 16407 */
          NdrFcLong( 0x6 ), /* 6 */
NdrFcShort( 0xd6 ), /* Offset= 214 (278) */
                                                                                       NdrFcShort( 0x272 ), /* Offset= 626 (888) */
/* 60 */
                                                                            /* 262 */
/* 64 */
                                                                            /* 264 */
                                                                                                           /* 0 */
                                                                                       NdrFcLong(0x0),
                                                                            /* 268 */
                                                                                                           /* Offset= 0 (268) */
                              /* 7 */
/* 66 */
          NdrFcLong(0x7),
                                                                                       NdrFcShort( 0x0 ),
/* 70 */
                                                                            /* 270 */
          NdrFcShort( 0x800c),
                                         /* Simple arm type: FC DOUBLE
                                                                                       NdrFcLong(0x1),
                                                                                                            /* 1 */
*/
                                                                            /* 274 */
                                                                                                           /* Offset= 0 (274) */
                                                                                       NdrFcShort( 0x0 ),
/* 72 */
          NdrFcLong( 0x8 ), /* 8 */
                                                                            /* 276 */
                                                                                       NdrFcShort( 0xffffffff ),
                                                                                                                      /* Offset= -1 (275) */
          NdrFcShort( 0xd0 ), /* Offset= 208 (284) */
                                                                            /* 278 */
/* 76 */
          NdrFcLong( 0xd ), /* 13 */
/* 78 */
                                                                                                                                 /* FC_STRUCT */
                                                                                                            0x15,
          NdrFcShort( 0xe2 ), /* Offset= 226 (308) */
/* 82 */
                                                                                                                                 /* 7 */
                                                                                                            0x7
                               /* 9 */
                                                                                                            /* 8 */
/* 84 */
          NdrFcLong( 0x9 ),
                                                                            /* 280 */ NdrFcShort( 0x8 ),
                                                                                                            /* FC HYPER */
/* 88 */
          NdrFcShort( 0xee ), /* Offset= 238 (326) */
                                                                            /* 282 */
                                                                                      0xb,
/* 90 */
                                                                                                                                 /* FC END */
          NdrFcLong( 0x2000 ),
                                         /* 8192 */
                                                                                                            0x5b,
          NdrFcShort( 0xfa ), /* Offset= 250 (344) */
/* 94 */
                                                                            /* 284 */
          NdrFcLong( 0x24 ), /* 36 */
/* 96 */
                                                                                                            0x12, 0x0, /* FC UP */
/* 100 */
          NdrFcShort( 0x308 ), /* Offset= 776 (876) */
                                                                            /* 286 */ NdrFcShort( 0xc ),
                                                                                                            /* Offset= 12 (298) */
/* 102 */
          NdrFcLong(0x4024),
                                         /* 16420 */
                                                                            /* 288 */
/* 106 */
          NdrFcShort( 0x302 ), /* Offset= 770 (876) */
                                                                                                            0x1b,
                                                                                                                                 /* FC CARRAY */
/* 108 */
          NdrFcLong(0x4011),
                                         /* 16401 */
                                                                                                                                 /* 1 */
                                                                                                            0x1.
          NdrFcShort( 0x300 ), /* Offset= 768 (880) */
/* 112 */
                                                                            /* 290 */ NdrFcShort( 0x2 ),
                                                                                                            /* 2 */
/* 114 */
          NdrFcLong( 0x4002 ),
                                         /* 16386 */
                                                                            /* 292 */ 0x9,
                                                                                                            /* Corr desc: FC_ULONG */
          NdrFcShort( 0x2fe ), /* Offset= 766 (884) */
/* 118 */
                                                                                                            0x0
/* 120 */
                                                                            /* 294 */ NdrFcShort( 0xfffc ), /* -4 */
          NdrFcLong( 0x4003 ),
                                         /* 16387 */
/* 124 */
          NdrFcShort( 0x2fc ), /* Offset= 764 (888) */
                                                                            /* 296 */ 0x6,
                                                                                                            /* FC SHORT */
/* 126 */
          NdrFcLong(0x4004),
                                                                                                                                 /* FC_END */
                                         /* 16388 */
                                                                                                            0x5b,
/* 130 */
          NdrFcShort( 0x2fa ), /* Offset= 762 (892) */
                                                                            /* 298 */
/* 132 */
                                                                                                                                 /* FC_CSTRUCT */
          NdrFcLong(0x4005),
                                         /* 16389 */
                                                                                                            0x17,
          NdrFcShort( 0x2f8 ), /* Offset= 760 (896) */
/* 136 */
                                                                                                                                 /* 3 */
                                                                                                            0x3
/* 138 */
          NdrFcLong(0x400b),
                                         /* 16395 */
                                                                            /* 300 */
                                                                                      NdrFcShort( 0x8 ),
                                                                                                            /* 8 */
/* 142 */
          NdrFcShort( 0x2e6 ), /* Offset= 742 (884) */
                                                                            /* 302 */
                                                                                       NdrFcShort( 0xfffffff2 ),
                                                                                                                      /* Offset= -14 (288) */
/* 144 */
          NdrFcLong( 0x400a ),
                                         /* 16394 */
                                                                            /* 304 */
                                                                                       0x8,
                                                                                                            /* FC LONG */
          NdrFcShort( 0x2e4 ), /* Offset= 740 (888) */
/* 148 */
                                                                                                            0x8,
                                                                                                                                 /* FC LONG */
/* 150 */
                                                                            /* 306 */ 0x5c,
                                                                                                            /* FC PAD */
          NdrFcLong( 0x4006),
                                         /* 16390 */
          NdrFcShort( 0x2ea ), /* Offset= 746 (900) */
/* 154 */
                                                                                                                                /* FC_END */
                                                                                                            0x5b,
          NdrFcLong( 0x4007 ),
/* 156 */
                                         /* 16391 */
                                                                            /* 308 */
/* 160 */
          NdrFcShort( 0x2e0 ), /* Offset= 736 (896) */
                                                                                                            0x2f,
                                                                                                                                 /* FC IP */
          NdrFcLong( 0x4008 ),
/* 162 */
                                         /* 16392 */
                                                                                                            0x5a
/* 166 */
          NdrFcShort( 0x2e2 ), /* Offset= 738 (904) */
                                                                            FC CONSTANT IID */
                                         /* 16397 */
                                                                                                            /* 0 */
/* 168 */
                                                                            /* 310 */ NdrFcLong( 0x0 ),
          NdrFcLong( 0x400d ),
/* 172 */
          NdrFcShort( 0x2e0 ), /* Offset= 736 (908) */
                                                                                       NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
                                                                            /* 314 */
/* 174 */
                                                                            /* 316 */ NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
                                         /* 16393 */
          NdrFcLong(0x4009),
/* 178 */
          NdrFcShort( 0x2de ), /* Offset= 734 (912) */
                                                                            /* 318 */ 0xc0,
                                                                                                            /* 192 */
/* 180 */
          NdrFcLong(0x6000),
                                         /* 24576 */
                                                                                                            0x0
                                                                                                                                 /* 0 */
/* 184 */
          NdrFcShort( 0x2dc ), /* Offset= 732 (916) */
                                                                            /* 320 */ 0x0,
                                                                                                            /* 0 */
/* 186 */
          NdrFcLong( 0x400c),
                                          /* 16396 */
                                                                                                            0x0,
                                                                                                                                 /* 0 */
/* 190 */
          NdrFcShort( 0x2da ), /* Offset= 730 (920) */
                                                                                                            /* 0 */
                                                                            /* 322 */ 0x0,
/* 192 */
          NdrFcLong( 0x10 ), /* 16 */
                                                                                                            0x0,
                                                                                                                                 /* 0 */
/* 196 */
                                                                            /* 324 */ 0x0,
                                                                                                            /* 0 */
          NdrFcShort( 0x8002 ),
                                         /* Simple arm type: FC_CHAR */
          NdrFcLong( 0x12 ), /* 18 */
/* 198 */
                                                                                                            0x46,
                                                                                                                                 /* 70 */
/* 202 */
                                                                            /* 326 */
                                         /* Simple arm type: FC_SHORT */
          NdrFcShort( 0x8006),
          NdrFcLong( 0x13 ), /* 19 */
/* 204 */
                                                                                                            0x2f,
                                                                                                                                 /* FC_IP */
/* 208 */
          NdrFcShort( 0x8008 ),
                                          /* Simple arm type: FC LONG */
                                                                                                            0x5a,
          NdrFcLong( 0x16 ), /* 22 */
/* 210 */
                                                                            FC CONSTANT IID */
/* 214 */
          NdrFcShort( 0x8008 ),
                                         /* Simple arm type: FC LONG */
                                                                            /* <del>3</del>28 */
                                                                                       NdrFcLong( 0x20400 ),
                                                                                                                      /* 132096 */
          NdrFcLong( 0x17 ), /* 23 */
/* 216 */
                                                                            /* 332 */
                                                                                                            /* 0 */
                                                                                       NdrFcShort( 0x0 ),
/* 220 */
          NdrFcShort( 0x8008 ),
                                         /* Simple arm type: FC_LONG */
                                                                            /* 334 */ NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
          NdrFcLong( 0xe ), /* 14 */
/* 222 */
                                                                            /* 336 */ 0xc0,
                                                                                                            /* 192 */
/* 226 */
          NdrFcShort( 0x2be ), /* Offset= 702 (928) */
                                                                                                                                 /* 0 */
                                                                                                            0x0.
/* 228 */
          NdrFcLong( 0x400e ),
                                         /* 16398 */
                                                                            /* 338 */ 0x0,
                                                                                                            /* 0 */
          NdrFcShort( 0x2c4 ), /* Offset= 708 (940) */
/* 232 */
                                                                                                                                 /* 0 */
                                                                                                            0x0,
                                                                                                            /* 0 */
/* 234 */
          NdrFcLong(0x4010),
                                         /* 16400 */
                                                                            /* 340 */ 0x0,
          NdrFcShort( 0x2c2 ), /* Offset= 706 (944) */
                                                                                                                                 /* 0 */
/* 238 */
                                                                                                            0x0.
/* 240 */ NdrFcLong( 0x4012 ),
                                         /* 16402 */
                                                                             /* 342 */ 0x0,
                                                                                                            /* 0 */
```

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/* 70 */
                                                                                                                                 /* FC PP */
                               0x46,
                                                                                                            0x4b,
/* 344 */
                                                                                                            0x5c,
                                                                                                                                 /* FC PAD */
                                                                             /* 456 */
                               0x12, 0x10.
                                                    /* FC UP
[pointer_deref] */
                                                                                                                                 /* FC NO REPEAT */
                                                                                                            0x46,
/* 346 */ NdrFcShort( 0x2 ),
                              /* Offset= 2 (348) */
                                                                                                                                 /* FC_PAD */
                                                                                                            0x5c
/* 348 */
                                                                             /* 458 */
                                                                                      NdrFcShort(0x4),
                                                                                                            /* 4 */
                               0x12, 0x0, /* FC UP */
                                                                             /* 460 */
                                                                                       NdrFcShort( 0x4 ),
                                                                                                            /* 4 */
/* 350 */ NdrFcShort( 0x1fc ), /* Offset= 508 (858) */
                                                                             /* 462 */
                                                                                       0x11, 0x0, /* FC RP */
                                                                             /* 464 */
/* 352 */
                                                                                       NdrFcShort( 0xffffffd4 ),
                                                                                                                      /* Offset= -44 (420) */
                                                                             /* 466 */
                               0x2a,
FC_ENCAPSULATED_UNION */
                                                                                                            0x5b,
                                                                                                                                 /* FC END */
                                                    /* 73 */
                               0x49
/* 354 */ NdrFcShort( 0x18 ), /* 24 */
                                                                                                            0x8,
                                                                                                                                 /* FC LONG */
/* 356 */ NdrFcShort( 0xa ),
                               /* 10 */
                                                                             /* 468 */ 0x8,
                                                                                                            /* FC_LONG */
/* 358 */
                               /* 8 */
                                                                                                                                 /* FC END */
          NdrFcLong( 0x8),
                                                                                                            0x5b,
                                                                             /* 470 */
/* 362 */
          NdrFcShort( 0x58 ), /* Offset= 88 (450) */
/* 364 */
          NdrFcLong( 0xd ),
                               /* 13 */
                                                                                                            0x21,
/* 368 */
          NdrFcShort( 0x78 ), /* Offset= 120 (488) */
                                                                             FC_BOGUS_ARRAY */
                              /* 9 */
/* 370 */
                                                                                                                                 /* 3 */
          NdrFcLong(0x9),
                                                                                                            0x3
/* 374 */
          NdrFcShort( 0x94 ), /* Offset= 148 (522) */
                                                                             /* 472 */ NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
                                                                             /* 474 */ 0x19,
/* 376 */
                              /* 12 */
          NdrFcLong( 0xc ),
                                                                                                            /* Corr desc: field pointer, FC_ULONG */
/* 380 */
          NdrFcShort( 0xbc ), /* Offset= 188 (568) */
                                                                                                            0x0,
/* 382 */ NdrFcLong( 0x24 ), /* 36 */
                                                                             /* 476 */ NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
/* 386 */
          NdrFcShort( 0x114 ), /* Offset= 276 (662) */
                                                                             /* 478 */ NdrFcLong( 0xffffffff ),
/* 388 */
          NdrFcLong( 0x800d ),
                                         /* 32781 */
                                                                             /* 482 */ 0x4c,
                                                                                                            /* FC_EMBEDDED_COMPLEX */
          NdrFcShort( 0x130 ), /* Offset= 304 (696) */
/* 392 */
                                                                                                            0x0
                                                                                                                                 /* 0 */
/* 394 */
          NdrFcLong( 0x10 ), /* 16 */
                                                                             /* 484 */ NdrFcShort( 0xffffff50 ),
                                                                                                                       /* Offset= -176 (308) */
          NdrFcShort( 0x148), /* Offset= 328 (726) */
                                                                             /* 486 */ 0x5c,
                                                                                                            /* FC_PAD */
/* 398 */
/* 400 */
          NdrFcLong( 0x2 ), /* 2 */
                                                                                                            0x5b,
                                                                                                                                 /* FC END */
          NdrFcShort( 0x160 ), /* Offset= 352 (756) */
                                                                             /* 488 */
/* 404 */
/* 406 */
          NdrFcLong( 0x3 ), /* 3 */
                                                                                                            0x1a,
          NdrFcShort( 0x178 ), /* Offset= 376 (786) */
/* 410 */
                                                                             FC_BOGUS_STRUCT */
/* 412 */ NdrFcLong( 0x14 ), /* 20 */
                                                                                                            0x3
                                                                                                                                 /* 3 */
          NdrFcShort( 0x190 ), /* Offset= 400 (816) */
/* 416 */
                                                                             /* 490 */ NdrFcShort( 0x8 ),
                                                                                                            /* 8 */
/* 418 */ NdrFcShort( 0xffffffff ),
                                         /* Offset= -1 (417) */
                                                                             /* 492 */
                                                                                       NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
/* 420 */
                                                                             /* 494 */
                                                                                       NdrFcShort( 0x6 ),
                                                                                                            /* Offset= 6 (500) */
                                                    /* FC CARRAY */
                                                                             /* 496 */ 0x8,
                                                                                                            /* FC LONG */
                               0x1b.
                                                    /* 3 */
                                                                                                                                 /* FC POINTER */
                               0x3
                                                                                                            0x36,
                               /* 4<sup>*</sup>/
/* 422 */ NdrFcShort( 0x4 ),
                                                                             /* 498 */ 0x5c,
                                                                                                            /* FC_PAD */
/* 424 */ 0x19,
                               /* Corr desc: field pointer, FC ULONG */
                                                                                                                                 /* FC_END */
                                                                                                            0x5b,
                                                                             /* 500 */
/* 426 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                                                            0x11, 0x0, /* FC_RP */
/* 428 */
                                                                             /* 502 */ NdrFcShort( 0xffffffe0 ),
                                                                                                                      /* Offset= -32 (470) */
                                                    /* FC PP */
                                                                             /* 504 */
                               0x4b
                                                    /* FC PAD */
                               0x5c,
                                                                                                            0x21,
/* 430 */
                                                                            FC_BOGUS_ARRAY */
                               0x48,
                                                                                                            0x3
                                                                                                                                 /* 3 */
FC VARIABLE REPEAT */
                                                                             /* 506 */ NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
                                                                             /* 508 */ 0x19,
                               0x49,
                                                                                                            /* Corr desc: field pointer, FC_ULONG */
FC FIXED OFFSET */
                                                                                                            0x0,
/* 432 */ NdrFcShort( 0x4 ),
                               /* 4 */
                                                                             /* 510 */ NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
/* 434 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                             /* 512 */ NdrFcLong( 0xffffffff ),
                                                                                                                      /* -1 */
/* 436 */ NdrFcShort( 0x1 ),
                               /* 1 */
                                                                                                            /* FC_EMBEDDED_COMPLEX */
                                                                             /* 516 */ 0x4c,
/* 438 */
          NdrFcShort( 0x0 ),
                              /* 0 */
                                                                                                            0x0
                                                                                                                                 /* 0 */
/* 440 */ NdrFcShort( 0x0 ),
                              /* 0 */
                                                                             /* 518 */ NdrFcShort( 0xfffffff40 ),
                                                                                                                      /* Offset= -192 (326) */
/* 442 */ 0x12, 0x0, /* FC UP */
                                                                                                            /* FC_PAD */
                                                                             /* 520 */ 0x5c,
/* 444 */
          NdrFcShort( 0xffffff6e ),
                                          /* Offset= -146 (298) */
                                                                                                                                 /* FC END */
                                                                                                            0x5b,
                                                                             /* 522 */
/* 446 */
                               0x5b,
                                                    /* FC END */
                                                                                                            0x1a,
                                                                            FC_BOGUS_STRUCT */
                               0x8,
                                                    /* FC LONG */
                                                                                                            0x3
                                                                                                                                 /* 3 */
                               /* FC PAD */
/* 448 */ 0x5c,
                                                                             /* 524 */ NdrFcShort( 0x8 ),
                                                                                                            /* 8 */
                               0x5b,
                                                    /* FC_END */
                                                                             /* 526 */
                                                                                       NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
/* 450 */
                                                                             /* 528 */ NdrFcShort( 0x6 ),
                                                                                                            /* Offset= 6 (534) */
                                                    /* FC PSTRUCT */
                                                                             /* 530 */ 0x8,
                                                                                                            /* FC LONG */
                               0x16,
                               0x3
                                                    /* 3 */
                                                                                                            0x36,
                                                                                                                                 /* FC POINTER */
                               /* 8 */
                                                                            /* 532 */ 0x5c,
/* 452 */ NdrFcShort( 0x8 ),
                                                                                                            /* FC_PAD */
/* 454 */
                                                                                                            0x5b,
                                                                                                                                 /* FC END */
```

```
/* 534 */
                                                                                                                                 /* FC END */
                                                                                                            0x5b,
                               0x11, 0x0, /* FC RP */
                                                                             /* 612 */
                                         /* Offset= -32 (504) */
/* 536 */ NdrFcShort( 0xffffffe0 ),
                                                                                                            0x1a,
                                                                             FC_BOGUS_STRUCT */
/* 538 */
                                                    /* FC CARRAY */
                                                                                                                                 /* 3 */
                               0x1b
                                                                                                            0x3
                                                    /* 3 */
                                                                             /* 614 */ NdrFcShort( 0x10 ),
                                                                                                            /* 16 */
                               0x3
                               /* 4 */
/* 540 */
          NdrFcShort(0x4),
                                                                             /* 616 */
                                                                                                            /* 0 */
                                                                                      NdrFcShort( 0x0 ),
                                                                             /* 618 */
                                                                                       NdrFcShort( 0xa ),
                                                                                                            /* Offset= 10 (628) */
/* 542 */
          0x19,
                               /* Corr desc: field pointer, FC_ULONG */
                                                                             /* 620 */ 0x8,
                                                                                                            /* FC_LONG */
                               0x0,
/* 544 */ NdrFcShort( 0x0 ),
                               /* 0<sup>*</sup>/
                                                                                                            0x8,
                                                                                                                                 /* FC LONG */
/* 546 */
                                                                             /* 622 */ 0x4c,
                                                                                                            /* FC EMBEDDED COMPLEX */
                                                    /* FC PP */
                                                                                                            0x0.
                               0x4b
                                                                                                                                 /* 0 */
                               0x5c,
                                                    /* FC PAD */
                                                                             /* 624 */ NdrFcShort( 0xffffffd8 ),
                                                                                                                       /* Offset= -40 (584) */
/* 548 */
                                                                             /* 626 */ 0x36,
                                                                                                            /* FC_POINTER */
                                                                                                                                 /* FC END */
                               0x48,
                                                                                                            0x5b,
                                                                             /* 628 */
FC VARIABLE REPEAT */
                               0x49,
                                                                                                            0x12, 0x0, /* FC UP */
FC FIXED OFFSET */
                                                                             /* 630 */ NdrFcShort( 0xffffffe4 ),
                                                                                                                      /* Offset= -28 (602) */
/* 550 */ NdrFcShort( 0x4 ),
                               /* 4 */
                                                                             /* 632 */
/* 552 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                                                            0x1b,
                                                                                                                                 /* FC CARRAY */
/* 554 */ NdrFcShort( 0x1 ),
                               /* 1 */
                                                                                                            0x3.
                                                                                                                                 /* 3 */
/* 556 */ NdrFcShort( 0x0 ),
                              /* 0 */
                                                                             /* 634 */ NdrFcShort( 0x4 ),
                                                                                                            /* 4 */
                              /* 0 */
/* 558 */ NdrFcShort( 0x0 ),
                                                                             /* 636 */ 0x19,
                                                                                                            /* Corr desc: field pointer, FC_ULONG */
/* 560 */ 0x12, 0x0, /* FC UP */
                                                                                                            0x0,
/* 562 */ NdrFcShort( 0x182 ), /* Offset= 386 (948) */
                                                                             /* 638 */ NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
/* 564 */
                                                                             /* 640 */
                               0x5b,
                                                    /* FC END */
                                                                                                            0x4b,
                                                                                                                                 /* FC PP */
                                                                                                                                 /* FC_PAD */
                                                                                                            0x5c,
                               0x8.
                                                    /* FC LONG */
                                                                             /* 642 */
                               /* FC PAD */
/* 566 */ 0x5c,
                                                                                                            0x48,
                               0x5b,
                                                    /* FC END */
                                                                            FC VARIABLE REPEAT */
/* 568 */
                                                                                                                                 /*
                                                                                                            0x49,
                               0x1a
                                                                            FC FIXED OFFSET */
FC BOGUS STRUCT */
                                                                             /* 644 */ NdrFcShort( 0x4 ),
                                                                                                            /* 4 */
                               0x3,
                                                    /* 3 */
                                                                             /* 646 */
                                                                                       NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
/* 570 */ NdrFcShort( 0x8 ),
                               /* 8 */
                                                                             /* 648 */
                                                                                      NdrFcShort(0x1),
                                                                                                            /* 1 */
                                                                             /* 650 */ NdrFcShort( 0x0 ),
/* 572 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                                                            /* 0 */
/* 574 */ NdrFcShort( 0x6 ),
                               /* Offset= 6 (580) */
                                                                             /* 652 */ NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
/* 576 */ 0x8,
                               /* FC_LONG */
                                                                             /* 654 */ 0x12, 0x0, /* FC_UP */
                                                    /* FC POINTER */
                                                                             /* 656 */ NdrFcShort( 0xffffffd4 ),
                                                                                                                      /* Offset= -44 (612) */
                               0x36,
/* 578 */ 0x5c,
                               /* FC PAD */
                                                                             /* 658 */
                                                    /* FC_END */
                                                                                                                                 /* FC_END */
                               0x5b
                                                                                                            0x5b.
/* 580 */
                               0x11, 0x0, /* FC RP */
                                                                                                                                 /* FC_LONG */
                                                                                                            0x8.
/* 582 */ NdrFcShort( 0xffffffd4 ),
                                          /* Offset= -44 (538) */
                                                                             /* 660 */ 0x5c,
                                                                                                            /* FC PAD */
/* 584 */
                                                                                                                                 /* FC_END */
                                                                                                            0x5b,
                               0x2f,
                                                    /* FC_IP */
                                                                             /* 662 */
                               0x5a,
                                                                                                            0x1a,
FC CONSTANT IID */
                                                                             FC_BOGUS_STRUCT */
/* 586 */ NdrFcLong( 0x2f ),
                               /* 47 */
                                                                                                                                 /* 3 */
                                                                                                            0x3,
/* 590 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                                                            /* 8 */
                                                                             /* 664 */ NdrFcShort( 0x8 ),
/* 592 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                             /* 666 */ NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
                               /* 192 */
                                                                             /* 668 */ NdrFcShort( 0x6 ),
                                                                                                            /* Offset= 6 (674) */
/* 594 */ 0xc0,
                               0x0
                                                    /* 0 */
                                                                             /* 670 */ 0x8,
                                                                                                            /* FC_LONG */
                               /* 0 */
                                                                                                                                 /* FC POINTER */
/* 596 */ 0x0,
                                                                                                            0x36,
                                                    /* 0 */
                                                                             /* 672 */ 0x5c,
                                                                                                            /* FC_PAD */
                               0x0.
/* 598 */ 0x0,
                               /* 0 */
                                                                                                            0x5b,
                                                                                                                                 /* FC END */
                               0x0
                                                    /* 0 */
                                                                             /* 674 */
                               /* 0 */
                                                                                                            0x11, 0x0, /* FC RP */
/* 600 */ 0x0,
                                                                             /* 676 */ NdrFcShort( 0xffffffd4 ),
                                                                                                                      /* Offset= -44 (632) */
                               0x46,
                                                    /* 70 */
/* 602 */
                                                                             /* 678 */
                               0x1b,
                                                    /* FC CARRAY */
                                                                                                            0x1d,
                                                                                                                                 /* FC SMFARRAY */
                                                    /* 0 */
                                                                                                                                 /* 0 */
                                                                                                            0x0.
                               0x0.
                               /* 1 */
                                                                             /* 680 */ NdrFcShort( 0x8 ),
/* 604 */ NdrFcShort( 0x1 ),
                                                                                                            /* 8 */
                                                                                                            /* FC CHAR */
                               /* Corr desc: field pointer, FC_ULONG */
                                                                             /* 682 */ 0x2,
/* 606 */ 0x19,
                               0x0,
                                                                                                            0x5b,
                                                                                                                                 /* FC END */
                               /* 4 */
                                                                             /* 684 */
/* 608 */ NdrFcShort( 0x4 ),
/* 610 */ 0x1,
                               /* FC BYTE */
                                                                                                            0x15,
                                                                                                                                 /* FC STRUCT */
```

```
/* 3 */
                                                                                                                                 /* 3 */
                               0x3,
                                                                                                            0x3
                               /* 16 */
/* 686 */ NdrFcShort( 0x10 ),
                                                                             /* 758 */ NdrFcShort( 0x8 ),
                                                                                                            /* 8 */
/* 688 */
          0x8,
                               /* FC LONG */
                                                                             /* 760 */
                                                                                                                                 /* FC PP */
                               0x6,
                                                    /* FC_SHORT */
                                                                                                            0x4b,
/* 690 */ 0x6.
                               /* FC_SHORT */
                                                                                                                                 /* FC_PAD */
                                                                                                            0x5c,
                                                                             /* 762 */
                               0x4c,
                                                                                                                                 /* FC_NO_REPEAT */
FC EMBEDDED COMPLEX */
                                                                                                            0x46,
                               /* 0 */
                                                                                                                                 /* FC_PAD */
/* 692 */ 0x0,
                                                                                                            0x5c,
                               NdrFcShort( 0xfffffff1 ),
                                                              /* Offset=
                                                                             /* 764 */
                                                                                       NdrFcShort(0x4),
                                                                                                            /* 4 */
                                                                             /* 766 */
-15 (678) */
                                                                                       NdrFcShort( 0x4 ),
                                                                                                            /* 4 */
                                                                             /* 768 */
                                                                                       0x12, 0x0, /* FC_UP */
                               0x5b,
                                                    /* FC END */
/* 696 */
                                                                             /* 770 */
                                                                                      NdrFcShort( 0xffffffe8 ),
                                                                                                                      /* Offset= -24 (746) */
                               0x1a,
                                                                             /* 772 */
FC_BOGUS_STRUCT */
                                                                                                                                 /* FC_END */
                                                                                                            0x5b.
                               0x3,
                                                    /* 3 */
                               /* 24 */
/* 698 */ NdrFcShort( 0x18 ),
                                                                                                            0x8,
                                                                                                                                 /* FC LONG */
                                                                                                            /* FC LONG */
/* 700 */
          NdrFcShort( 0x0 ),
                               /* 0 */
                                                                             /* 774 */ 0x8,
/* 702 */ NdrFcShort( 0xa ),
                               /* Offset= 10 (712) */
                                                                                                            0x5b,
                                                                                                                                 /* FC END */
/* 704 */ 0x8.
                               /* FC LONG */
                                                                             /* 776 */
                                                    /* FC POINTER */
                                                                                                            0x1b,
                                                                                                                                 /* FC CARRAY */
                               /* FC_EMBEDDED_COMPLEX */
/* 706 */ 0x4c,
                                                                                                            0x3.
                                                                                                                                 /* 3 */
                                                                             /* 778 */ NdrFcShort( 0x4 ),
                                                                                                            /* 4 */
                               0x0,
/* 708 */ NdrFcShort( 0xffffffe8 ),
                                          /* Offset= -24 (684) */
                                                                             /* 780 */
                                                                                      0x19,
                                                                                                            /* Corr desc: field pointer, FC_ULONG */
/* 710 */ 0x5c,
                               /* FC PAD */
                                                                                                            0x0,
                               0x5b,
                                                    /* FC END */
                                                                             /* 782 */
                                                                                      NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
/* 712 */
                                                                             /* 784 */ 0x8.
                                                                                                            /* FC LONG */
                               0x11, 0x0, /* FC RP */
                                                                                                            0x5b,
                                                                                                                                 /* FC END */
                                                                             /* 786 */
/* 714 */ NdrFcShort( 0xffffff0c ),
                                          /* Offset= -244 (470) */
/* 716 */
                                                                                                            0x16,
                                                                                                                                 /* FC PSTRUCT */
                                                    /* FC_CARRAY */
                               0x1b.
                                                                                                            0x3.
                                                                                                                                 /* 3 */
                               0x0
                                                    /* 0 */
                                                                             /* 788 */
                                                                                      NdrFcShort( 0x8 ).
                                                                                                            /* 8 */
                               /* 1 */
          NdrFcShort(0x1),
/* 718 */
                                                                             /* 790 */
/* 720 */
          0x19
                               /* Corr desc: field pointer, FC_ULONG */
                                                                                                            0x4b
                                                                                                                                 /* FC PP */
                                                                                                            0x5c,
                                                                                                                                 /* FC PAD */
                               0x0.
/* 722 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                             /* 792 */
/* 724 */ 0x1,
                               /* FC BYTE */
                                                                                                            0x46,
                                                                                                                                 /* FC NO REPEAT */
                                                    /* FC_END */
                                                                                                                                 /* FC_PAD */
                               0x5b.
                                                                                                            0x5c.
/* 726 */
                                                                             /* 794 */
                                                                                       NdrFcShort(0x4),
                                                                                                            /* 4 */
                                                    /* FC_PSTRUCT */
                                                                             /* 796 */
                                                                                       NdrFcShort( 0x4 ),
                                                                                                            /* 4 */
                               0x16.
                                                    /* 3 */
                                                                             /* 798 */
                                                                                       0x12. 0x0. /* FC UP */
                               0x3
/* 728 */
          NdrFcShort(0x8),
                               /* 8 */
                                                                             /* 800 */
                                                                                       NdrFcShort( 0xffffffe8 ),
                                                                                                                      /* Offset= -24 (776) */
/* 730 */
                                                                             /* 802 */
                               0x4b,
                                                    /* FC PP */
                                                                                                                                 /* FC END */
                                                                                                            0x5b,
                                                    /* FC_PAD */
                               0x5c,
/* 732 */
                                                                                                            0x8,
                                                                                                                                 /* FC LONG */
                                                    /* FC_NO_REPEAT */
                                                                                                            /* FC_LONG */
                                                                            /* 804 */ 0x8,
                               0x46,
                               0x5c,
                                                    /* FC PAD */
                                                                                                            0x5b,
                                                                                                                                 /* FC END */
/* 734 */
          NdrFcShort(0x4),
                               /* 4 */
                                                                             /* 806 */
                               /* 4 */
                                                                                                                                 /* FC_CARRAY */
/* 736 */
          NdrFcShort(0x4),
                                                                                                            0x1b,
/* 738 */
          0x12, 0x0, /* FC UP */
                                                                                                                                 /* 7 */
                                                                                                            0x7,
/* 740 */ NdrFcShort( 0xffffffe8 ),
                                                                                                            /* 8<sup>*</sup>/
                                                                             /* 808 */ NdrFcShort( 0x8 ),
                                          /* Offset= -24 (716) */
/* 742 */
                                                                             /* 810 */ 0x19,
                                                                                                            /* Corr desc: field pointer, FC_ULONG */
                                                    /* FC_END */
                               0x5b.
                                                                                                            0x0,
                                                                             /* 812 */ NdrFcShort( 0x0 ),
                                                                                                            /* 0 */
                                                                             /* 814 */
                                                                                                            /* FC HYPER */
                               0x8,
                                                    /* FC_LONG */
                                                                                       0xb,
/* 744 */ 0x8,
                               /* FC LONG */
                                                                                                                                 /* FC_END */
                                                                                                            0x5b,
                                                    /* FC END */
                                                                             /* 816 */
                               0x5b,
/* 746 */
                                                                                                            0x16,
                                                                                                                                 /* FC PSTRUCT */
                                                    /* FC CARRAY */
                                                                                                                                 /* 3 */
                               0x1b,
                                                                                                            0x3,
                                                    /* 1 */
                                                                             /* 818 */ NdrFcShort( 0x8 ),
                                                                                                            /* 8 */
                               0x1,
/* 748 */ NdrFcShort( 0x2 ),
                               /* 2 */
                                                                             /* 820 */
/* 750 */
          0x19,
                               /* Corr desc: field pointer, FC_ULONG */
                                                                                                            0x4b,
                                                                                                                                 /* FC PP */
                                                                                                                                 /* FC_PAD */
                               0x0,
                                                                                                            0x5c,
                                                                             /* 822 */
/* 752 */ NdrFcShort( 0x0 ),
                               /* 0 */
/* 754 */ 0x6,
                               /* FC SHORT */
                                                                                                                                 /* FC NO REPEAT */
                                                                                                            0x46,
                               0x5b,
                                                    /* FC END */
                                                                                                            0x5c,
                                                                                                                                 /* FC PAD */
/* 756 */
                                                                             /* 824 */ NdrFcShort( 0x4 ),
                                                                                                            /* 4 */
                               0x16,
                                                    /* FC PSTRUCT */
                                                                             /* 826 */ NdrFcShort( 0x4 ),
                                                                                                            /* 4 */
```

				1				
	0x12, 0x0, /* FC_UP		24 (006) */	/# OOO #/		0x5c,		/* FC_PAD */
	NdrFcShort( 0xffffffe	e8), /* Offset=	-24 (806) */	/* 900 */		012 00	/* EC_IID	*/
/* 832 */		0x5b,	/* EC_END_*/	/* 002 */	NdrFcShort( 0xfffffd9		, /* FC_UP	
		0x30,	/* FC_END */	/* 902 ·/ /* 904 */	Null Colloit Oxilling	90 ),	/ Olisei-	-024 (278) 17
		0x8,	/* FC_LONG */	/ 304 /		0x12 0x10	0,	/* FC_UP
/* 834 */	0x8	/* FC_LONG */	/ re_borrd /	[pointer_d		0X12, 0X1	0,	7 10_01
7 031 7	ono,	0x5b,	/* FC_END */		NdrFcShort( 0xfffffd9	92 ).	/* Offset=	-622 (284) */
/* 836 */		,	,	/* 908 */		- /,	, , , , , , , , , , , , , , , , , , , ,	v== (=v ·)
		0x15,	/* FC_STRUCT */			0x12, 0x10	0,	/* FC_UP
		0x3,	/* 3 */	[pointer_d				_
	NdrFcShort( 0x8 ),	/* 8 */		/* 910 */	NdrFcShort( 0xfffffda	a6),	/* Offset=	-602 (308) */
/ <b>*</b> 840 <b>*</b> /	0x8,	/* FC_LONG */		/* 912 */				
			/* FC_LONG */			0x12, 0x10	0,	/* FC_UP
/* 842 */	0x5c,	/* FC_PAD */	/* FC FND */	[pointer_d	leret] */	1.4.5	/* O.CC .	500 (226) */
/* 844 */		0x5b,	/* FC_END */	/* 914 */ /* 916 */	NdrFcShort( 0xfffffdb	04),	/* Offset=	-588 (326) */
/ · 844 ·/		0x1b,	/* FC_CARRAY */	/ 910 /		0x12, 0x1	0	/* FC_UP
		0x16, 0x3,	/* 3 */	[pointer d		UX12, UX1	0,	/ I'C_01
/* 846 */	NdrFcShort( 0x8 ),	/* 8 */	1 3 1		NdrFcShort( 0xfffffdo	c2.)	/* Offset=	-574 (344) */
/* 848 */	\ //	/* Corr desc: FC USF	HORT */	/* 920 */	Titali Conort Continue	·- ),	, 011000	<i>5</i> / 1 ( <i>5</i> 1 1) /
	,		/* */			0x12, 0x10	0,	/* FC UP
/* 850 */	NdrFcShort( 0xffd8 )	, /* -40 */		[pointer_d	leref] */			_
/* 852 */	0x4c,	/* FC_EMBEDDED_	COMPLEX */	/* 922 */	NdrFcShort( 0x2 ),	/* Offset=	2 (924) */	
		0x0,		/* 924 */				
		ee ), /* Offset=	-18 (836) */				, /* FC_UP	
/* 856 */	0x5c,	/* FC_PAD */			NdrFcShort( 0x16 ),	/* Offset=	22 (948) */	1
/* O.F.O. */		0x5b,	/* FC_END */	/* 928 */		0.15		/* EC CEDILOT */
/* 858 */		0.10	/ <b>*</b>			0x15,		/* FC_STRUCT */ /* 7 */
EC BOG	US_STRUCT */	0x1a,	/.	/* 030 */	NdrFcShort( 0x10 ),	0x7, /* 16 */		/ · / ·/
rc_boo	os_stroct /	0x3,	/* 3 */	/* 930 */ /* 932 */		/* FC_SH	ORT */	
/* 860 */	NdrFcShort( 0x28 ),		1 3 1	752 1	oxo,	0x1,	ORT /	/* FC BYTE */
		ee), /* Offset=	-18 (844) */	/* 934 */	0x1,	/* FC_BY	TE */	, 10_5112 ,
	NdrFcShort( 0x0 ),		,		,	0x38,		/* FC ALIGNM4 */
/ <b>*</b> 866 <b>*</b> /		/* FC_SHORT */		/* 936 */	0x8,	/* FC_LO	NG */	_
			/* FC_SHORT */			0x39,		/* FC_ALIGNM8 */
/ <b>*</b> 868 <b>*</b> /	0x38,	/* FC_ALIGNM4 */		/* 938 */	0xb,	/* FC_HY		
			/* FC_LONG */			0x5b,		/* FC_END */
/ <b>*</b> 870 <b>*</b> /	0x8,	/* FC_LONG */	140	/* 940 */			/* EC IID	
			/*					
EC EMD	EDDED COMBLEY *	,		/* 0.42 */	NdrEachart Oxfeeeff	0x12, 0x0		
	EDDED_COMPLEX *	*/			NdrFcShort( 0xfffffff			
FC_EMB /* 872 */		/* 0 */	7) /* Offset=	/* 942 */ /* 944 */	NdrFcShort( 0xfffffff	2),	/* Offset=	-14 (928) */
/* <del>872</del> */	0x0,	*/	7), /* Offset=	/* 944 */		0x12, 0x8,	/* Offset= , /* FC_UP	
	0x0,	/* 0 */ NdrFcShort( 0xfffffdf				2),	/* Offset= , /* FC_UP AR */	-14 (928) */
/* <del>872</del> */	0x0,	/* 0 */ NdrFcShort( 0xfffffdf 0x5b,	/* FC_END */	/* 944 */		0x12, 0x8, /* FC_CH	/* Offset= , /* FC_UP AR */	-14 (928) */ [simple_pointer] */
/* 872 */ -521 (352 /* 876 */	0x0, -	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP	/* FC_END */ */	/* 944 */ /* 946 */ /* 948 */	0x2,	0x12, 0x8, /* FC_CH	/* Offset= , /* FC_UP AR */	-14 (928) */ [simple_pointer] */
/* 872 */ -521 (352 /* 876 */ /* 878 */	0x0,	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP	/* FC_END */	/* 944 */ /* 946 */ /* 948 */		0x12, 0x8, /* FC_CH 0x5c, 0x1a,	/* Offset= , /* FC_UP AR */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /*
/* 872 */ -521 (352 /* 876 */	0x0, -	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP f6 ), /* Offset=	/* FC_END */ */ -266 (612) */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU	0x2, US_STRUCT */	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7,	/* Offset= , /* FC_UP AR */	-14 (928) */ [simple_pointer] */ /* FC_PAD */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */	0x0, - )*/ NdrFcShort( 0xfffffef	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP 66 ), /* Offset= 0x12, 0x8, /* FC_UP	/* FC_END */ */ -266 (612) */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */	0x2, US_STRUCT */ NdrFcShort( 0x20 ),	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */	/* Offset= , /* FC_UP AR */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /*
/* 872 */ -521 (352 /* 876 */ /* 878 */	0x0, - )*/ NdrFcShort( 0xfffffef	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP 66 ), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */	/* FC_END */ */ -266 (612) */ [simple_pointer] */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 */	/* Offset= ,/* FC_UP AR */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /*
/* 872 */ -521 (352) /* 876 */ /* 878 */ /* 880 */ /* 882 */	0x0, - )*/ NdrFcShort( 0xfffffef	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP 66 ), /* Offset= 0x12, 0x8, /* FC_UP	/* FC_END */ */ -266 (612) */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 954 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  NdrFcShort( 0x0 ),	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 */ /* Offset=	/* Offset= /* FC_UP AR */ 0 (954) */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /*
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */	0x0, - )*/ NdrFcShort( 0xfffffef	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP 66), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c,	/* FC_END */ */ -266 (612) */ [simple_pointer] */ /* FC_PAD */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  NdrFcShort( 0x0 ),	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 */ /* Offset= /* FC_LO	/* Offset= /* FC_UP AR */ 0 (954) */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 882 */	0x0, — 0x0, — 0x1,	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP 66), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP	/* FC_END */ */ -266 (612) */ [simple_pointer] */ /* FC_PAD */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 954 */ /* 956 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  NdrFcShort( 0x0 ),  0x8,	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 */ /* Offset= /* FC_LO 0x8,	/* Offset= ,/* FC_UP AR */ 0 (954) */ NG */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /*
/* 872 */ -521 (352) /* 876 */ /* 878 */ /* 880 */ /* 882 */	0x0, — 0x0, — 0x1,	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP 66), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_SHORT */	/* FC_END */  */ -266 (612) */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 954 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  NdrFcShort( 0x0 ),  0x8,	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 */ /* Offset= /* FC_LO	/* Offset= ,/* FC_UP AR */ 0 (954) */ NG */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */ /* FC_LONG */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 882 */	0x0, — 0x0, — 0x1,	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP 66), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_SHORT */	/* FC_END */ */ -266 (612) */ [simple_pointer] */ /* FC_PAD */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 954 */ /* 956 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  NdrFcShort( 0x0 ),  0x8,	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 */ /* Offset= /* FC_LO 0x8, /* FC_SHe	/* Offset= , /* FC_UP AR */ 0 (954) */ NG */ ORT */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 884 */ /* 886 */	0x0, — 0x0, — 0x1,	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP 66 ), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_SHORT */ 0x5c, 0x12, 0x8, /* FC_UP	/* FC_END */  */ -266 (612) */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 956 */ /* 958 */ /* 960 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  NdrFcShort( 0x0 ),  0x8,  0x6,	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* Offset= /* FC_LO 0x8, /* FC_SHo 0x6, /* FC_SHo	/* Offset= , /* FC_UP AR */  0 (954) */ NG */ ORT */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */  /* FC_LONG */ /* FC_SHORT */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 884 */ /* 886 */	0x0, - 0x1, - 0x6, -	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP f6 ), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_SHORT */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_LONG */	/* FC_END */  */ -266 (612) */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 954 */ /* 958 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  NdrFcShort( 0x0 ),  0x8,  0x6,	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* Offset= /* FC_LO 0x8, /* FC_SHo 0x6, /* FC_SHo 0x6, /* FC_EM	/* Offset= , /* FC_UP AR */  0 (954) */ NG */ ORT */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */  /* FC_LONG */ /* FC_SHORT */ COMPLEX */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 884 */ /* 886 */ /* 888 */	0x0, - 0x1, - 0x6, -	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP f6 ), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_SHORT */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_LONG */	/* FC_END */  */ -266 (612) */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 954 */ /* 958 */ /* 960 */ /* 962 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  NdrFcShort( 0x0 ),  0x8,  0x6,  0x6,  0x4c,	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 */ /* FC_LO 0x8, /* FC_SHo 0x6, /* FC_SHo 0x6,	/* Offset= ,/* FC_UP AR */  0 (954) */ NG */ ORT */ ORT */ IBEDDED_	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */  /* FC_LONG */ /* FC_SHORT */ COMPLEX */ /* 0 */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 884 */ /* 886 */	0x0, - 0x1, - 0x6, -	/* 0 */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP 66 ), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_SHORT */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_LONG */ 0x5c,	/* FC_END */  */ -266 (612) */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 956 */ /* 960 */ /* 962 */ /* 964 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  NdrFcShort( 0x0 ),  0x8,  0x6,  0x6,  0x4c,  NdrFcShort( 0xfffffc4	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* Offset= /* FC_LO 0x8, /* FC_SHo 0x6, /* FC_SHo 0x6, /* FC_EM	/* Offset= ,/* FC_UP AR */  0 (954) */ NG */ ORT */ ORT */ IBEDDED_ /* Offset=	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */  /* FC_LONG */ /* FC_SHORT */ COMPLEX */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 884 */ /* 886 */ /* 888 */ /* 890 */	0x0, - 0x1, - 0x6, - 0x8, -	/* () */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP 66 ), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_SHORT */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_LONG */ 0x5c, 0x12, 0x8, /* FC_UP	/* FC_END */  */ -266 (612) */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 954 */ /* 958 */ /* 960 */ /* 962 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  NdrFcShort( 0x0 ),  0x8,  0x6,  0x6,  0x4c,  NdrFcShort( 0xfffffc4	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 */ /* Offset= /* FC_LO 0x8, /* FC_SHo 0x6, /* FC_SHo 0x6, /* FC_EM 0x0, /* FC_EM	/* Offset= ,/* FC_UP AR */  0 (954) */ NG */ ORT */ ORT */ IBEDDED_ /* Offset=	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */  /* FC_LONG */ /* FC_SHORT */ COMPLEX */ /* 0 */ -958 (6) */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 884 */ /* 886 */ /* 888 */	0x0, - 0x1, - 0x6, -	/* () */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP f6 ), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_SHORT */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_LONG */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_LONG */ 0x5c,	/* FC_END */  */ -266 (612) */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 956 */ /* 960 */ /* 962 */ /* 966 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  0x8,  0x6,  0x6,  0x4c,  NdrFcShort( 0xfffffc4  0x5c,	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 */ /* Offset= /* FC_LO 0x8, /* FC_SHO 0x6, /* FC_EM 0x0, 42), /* FC_PAO 0x5b,	/* Offset= /* FC_UP AR */  0 (954) */ NG */  ORT */ ORT */ IBEDDED_ /* Offset= D */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */  /* FC_LONG */ /* FC_SHORT */ COMPLEX */ -958 (6) */ /* FC_END */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 884 */ /* 886 */ /* 888 */ /* 890 */ /* 892 */	0x0, - 0x1, - 0x6, - 0x8, -	/* () */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP f6 ), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_SHORT */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_LONG */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_LONG */ 0x5c,	/* FC_END */  */ -266 (612) */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */  [simple_pointer] */  /* FC_PAD */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 956 */ /* 960 */ /* 962 */ /* 964 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  0x8,  0x6,  0x6,  0x4c,  NdrFcShort( 0xfffffc4  0x5c,	2 ), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 */ /* Offset= /* FC_LO 0x8, /* FC_SHO 0x6, /* FC_EM 0x0, 42 ), /* FC_PA 0x5b, /* FC_US.	/* Offset= ,/* FC_UP AR */  0 (954) */ NG */ ORT */ ORT */ IBEDDED_ /* Offset=	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */  /* FC_LONG */ /* FC_SHORT */ COMPLEX */ -958 (6) */ /* FC_END */ HAL */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 884 */ /* 886 */ /* 888 */ /* 890 */	0x0, - 0x1, - 0x6, - 0x8, -	/* () */ /* () */ NdrFcShort( 0xfffffdf 0x5b,  0x12, 0x0, /* FC_UP /6 (), /* Offset=  0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c,  0x12, 0x8, /* FC_UP /* FC_SHORT */ 0x5c,  0x12, 0x8, /* FC_UP /* FC_LONG */ 0x5c,  0x12, 0x8, /* FC_UP /* FC_LONG */ 0x5c,	/* FC_END */  */ -266 (612) */  [simple_pointer] */  /* FC_PAD */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 954 */ /* 958 */ /* 960 */ /* 964 */ /* 968 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  0x8,  0x6,  0x6,  0x4c,  NdrFcShort( 0xfffffc2 0x5c,  0xb4,	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 ffset= /* FC_LO 0x8, /* FC_SHO 0x6, /* FC_EM 0x0, 42), /* FC_PA 0x5b, /* FC_US	/* Offset= /* FC_UP AR */  0 (954) */ NG */  ORT */ ORT */ IBEDDED_ /* Offset= D */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */  /* FC_LONG */ /* FC_SHORT */ COMPLEX */ -958 (6) */ /* FC_END */
/* 872 */ -521 (352 /* 876 */ /* 878 */ /* 880 */ /* 884 */ /* 886 */ /* 888 */ /* 890 */ /* 892 */	0x0, - 0x1, - 0x6, - 0x8, - 0xa, -	/* () */ NdrFcShort( 0xfffffdf 0x5b, 0x12, 0x0, /* FC_UP f6 ), /* Offset= 0x12, 0x8, /* FC_UP /* FC_BYTE */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_SHORT */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_LONG */ 0x5c, 0x12, 0x8, /* FC_UP /* FC_LONG */ 0x5c,	/* FC_END */  */ -266 (612) */  [simple_pointer] */  /* FC_PAD */	/* 944 */ /* 946 */ /* 948 */ FC_BOGU /* 950 */ /* 952 */ /* 954 */ /* 958 */ /* 960 */ /* 964 */ /* 968 */	0x2,  US_STRUCT */  NdrFcShort( 0x20 ),  NdrFcShort( 0x0 ),  0x8,  0x6,  0x6,  0x4c,  NdrFcShort( 0xfffffc4  0x5c,  0xb4,	2), 0x12, 0x8, /* FC_CH 0x5c, 0x1a, 0x7, /* 32 */ /* 0 ffset= /* FC_LO 0x8, /* FC_SH 0x6, /* FC_EM 0x0, 42), /* FC_PA 0x5b, /* FC_US	/* Offset= /* FC_UP AR */  0 (954) */ NG */  ORT */ ORT */ IBEDDED_ /* Offset= D */	-14 (928) */ [simple_pointer] */ /* FC_PAD */ /* /* 7 */  /* FC_LONG */ /* FC_SHORT */ COMPLEX */ -958 (6) */ /* FC_END */ HAL */

```
/* 974 */ NdrFcShort( 0x0 ), /* 0 */
/* 976 */
         NdrFcShort( 0xfffffc32 ),
                                      /* Offset= -974 (2) */
                                                                       #endif /* !defined( M IA64) && !defined( M AXP64)*/
/* 978 */
                             0x11, 0x4, /* FC_RP [alloced_on_stack] */
/* 980 */ NdrFcShort( 0x6 ),
                             /* Offset= 6 (986) */
                                                                       #pragma warning( disable: 4049 ) /* more than 64k source lines */
/* 982 */
                             0x13, 0x0, /* FC OP */
                                                                       /* this ALWAYS GENERATED file contains the proxy stub code */
/* 984 */ NdrFcShort( 0xffffffdc ),
                                      /* Offset= -36 (948) */
                             /* FC_USER_MARSHAL */
/* 986 */ 0xb4,
                                                /* 131 */
                                                                        /* File created by MIDL compiler version 5.03.0280 */
                             0x83.
/* 988 */ NdrFcShort( 0x0 ),
                            /* 0 */
                                                                       /* at Sat Apr 08 16:40:10 2000
/* 990 */ NdrFcShort( 0x10 ), /* 16 */
/* 992 */ NdrFcShort( 0x0 ),
                            /* 0 */
                                                                       /* Compiler settings for .\src\tpcc com ps.idl:
/* 994 */ NdrFcShort( 0xfffffff4 ),
                                      /* Offset= -12 (982) */
                                                                         Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext,
                             0x0
                                                                         error checks: allocation ref bounds_check enum stub_data
                                                                         VC __declspec() decoration level:
                                                                              declspec(uuid()), __declspec(selectany), __declspec(novtable)
                                                                            DECLSPEC_UUID(), MIDL_INTERFACE()
const CInterfaceProxyVtbl * tpcc com ps ProxyVtblList[] =
                                                                       //@@MIDL_FILE_HEADING( )
  (CInterfaceProxyVtbl *) & ITPCCProxyVtbl,
  0
                                                                       #if defined(_M_IA64) || defined(_M_AXP64)
                                                                       #define USE STUBLESS PROXY
};
const CInterfaceStubVtbl * _tpcc_com_ps_StubVtblList[] =
                                                                       /* verify that the <rpcproxy.h> version is high enough to compile this file*/
                                                                       #ifndef __REDQ_RPCPROXY_H_VERSION
  ( CInterfaceStubVtbl *) &_ITPCCStubVtbl,
                                                                       #define REQUIRED RPCPROXY H VERSION 475
                                                                       #endif
};
PCInterfaceName const _tpcc_com_ps_InterfaceNamesList[] =
                                                                       #include "rpcproxy.h"
  "ITPCC".
                                                                       #ifndef RPCPROXY H VERSION
                                                                       #error this stub requires an updated version of <rpcproxy.h>
  0
                                                                       #endif // RPCPROXY H VERSION
};
#define _tpcc_com_ps_CHECK_IID(n)
                                      IID_GENERIC_CHECK_IID(
                                                                       #include "tpcc_com_ps.h"
_tpcc_com_ps, pIID, n)
                                                                       #define TYPE FORMAT STRING SIZE 979
                                                                       #define PROC FORMAT STRING SIZE 253
int __stdcall _tpcc_com_ps_IID_Lookup( const IID * pIID, int * pIndex )
                                                                       #define TRANSMIT AS TABLE SIZE 0
                                                                       #define WIRE_MARSHAL_TABLE_SIZE 1
  if(! tpcc com ps CHECK IID(0))
                                                                       typedef struct _MIDL_TYPE_FORMAT_STRING
    *pIndex = 0;
    return 1;
                                                                         unsigned char Format[ TYPE_FORMAT_STRING_SIZE ];
                                                                         } MIDL TYPE FORMAT STRING;
  return 0;
                                                                       typedef struct MIDL PROC FORMAT STRING
}
const ExtendedProxyFileInfo tpcc com ps ProxyFileInfo =
                                                                         short
                                                                                   Pad:
                                                                         unsigned char Format[ PROC FORMAT STRING SIZE ];
  (PCInterfaceProxyVtblList *) & _tpcc_com_ps_ProxyVtblList,
                                                                         } MIDL_PROC_FORMAT_STRING;
  (PCInterfaceStubVtblList *) & tpcc com ps StubVtblList,
  (const PCInterfaceName * ) & _tpcc_com_ps_InterfaceNamesList,
                                                                       extern const MIDL TYPE FORMAT STRING MIDL TypeFormatString;
  0, // no delegation
                                                                       extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;
  & _tpcc_com_ps_IID_Lookup,
  1.
  0, /* table of [async_uuid] interfaces */
                                                                       /* Standard interface: __MIDL_itf_tpcc_com_ps_0000, ver. 0.0,
  0, /* Filler1 */
  0. /* Filler2 */
                                                                       0 /* Filler3 */
                                                                       x00}} */
```

```
/* Object interface: IUnknown, ver. 0.0,
                                                                        &ITPCC_ServerInfo,
0, /* pure interpreted */
0x46}} */
                                                                        CStdStubBuffer_METHODS
/* Object interface: ITPCC, ver. 0.0,
                                                                      extern const USER MARSHAL ROUTINE QUADRUPLE
                                                                      UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ];
GUID={0xFEEE6AA2,0x84B1,0x11d2,{0xBA,0x47,0x00,0xC0,0x4F,0xBF,0x
E0,0x8B}} */
                                                                      static const MIDL STUB DESC Object StubDesc =
                                                                        Ò.
extern const MIDL STUB DESC Object StubDesc;
                                                                        NdrOleAllocate,
                                                                        NdrOleFree,
                                                                        0,
extern const MIDL_SERVER_INFO ITPCC_ServerInfo;
                                                                        0,
                                                                        0,
#pragma code_seg(".orpc")
                                                                        0,
static const unsigned short ITPCC_FormatStringOffsetTable[] =
                                                                          MIDL TypeFormatString.Format,
                                                                        1, /* -error bounds_check flag */
  0,
  44,
                                                                        0x50002, /* Ndr library version */
  88.
                                                                        0x5030118, /* MIDL Version 5.3.280 */
  132,
  176,
  220
                                                                        UserMarshalRoutines.
                                                                        0, /* notify & notify flag routine table */
                                                                        0x1, /* MIDL flag */
static const MIDL SERVER INFO ITPCC ServerInfo =
                                                                        0, /* Reserved3 */
                                                                        0, /* Reserved4 */
  &Object StubDesc,
                                                                        0 /* Reserved5 */
  0,
    MIDL ProcFormatString.Format,
  &ITPCC FormatStringOffsetTable[-3],
                                                                      #pragma data seg(".rdata")
  0,
                                                                      static const USER MARSHAL ROUTINE QUADRUPLE
  0,
                                                                      UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ] =
  0
  };
static const MIDL STUBLESS PROXY INFO ITPCC ProxyInfo =
                                                                             VARIANT UserSize
                                                                             ,VARIANT UserMarshal
  &Object StubDesc,
                                                                             ,VARIANT UserUnmarshal
    MIDL_ProcFormatString.Format,
                                                                             ,VARIANT_UserFree
  &ITPCC FormatStringOffsetTable[-3],
  0,
                                                                          };
  0
  };
                                                                      #if !defined( RPC WIN64 )
CINTERFACE_PROXY_VTABLE(9) _ITPCCProxyVtbl =
                                                                      #error Invalid build platform for this stub.
                                                                      #endif
  &ITPCC_ProxyInfo,
  &IID ITPCC,
                                                                      static const MIDL PROC FORMAT STRING MIDL ProcFormatString =
  IUnknown_QueryInterface_Proxy,
                                                                         {
  IUnknown_AddRef_Proxy,
                                                                          0.
  IUnknown Release Proxy
  (void *)-1 /* ITPCC::NewOrder */,
  (void *)-1 /* ITPCC::Payment */,
                                                                                /* Procedure NewOrder */
  (void *)-1 /* ITPCC::Delivery */,
  (void *)-1 /* ITPCC::StockLevel */.
                                                                                                   0x33,
  (void *)-1 /* ITPCC::OrderStatus */,
                                                                      FC_AUTO_HANDLE */
  (void *)-1 /* ITPCC::CallSetComplete */
                                                                                                                      /* Old Flags: object,
                                                                                                   0x6c.
                                                                      Oi2 */
                                                                      /* 2 */
                                                                                NdrFcLong( 0x0 ),
                                                                                                   /* 0 */
const CInterfaceStubVtbl ITPCCStubVtbl =
                                                                      /* 6 */
                                                                                NdrFcShort(0x3),
                                                                                                  /* 3 */
                                                                      #ifndef ALPHA
  &IID ITPCC,
                                                                      /* 8 */
                                                                               NdrFcShort( 0x38 ), /* ia64 Stack size/offset = 56 */
```

```
/* 58 */ 0x47,
#else
                                                                                                                 /* Oi2 Flags: srv must size, clt must size, has
                                 NdrFcShort(0x30), /* axp64 Stack
                                                                                return, has ext, */
size/offset = 48 */
                                                                                                                 0x3
                                                                                                                                       /* 3 */
                                                                                /* 60 */
#endif
                                                                                           0xa,
                                                                                                                 /* 10 */
/* 10 */
          NdrFcShort( 0x0 ),
                                /* 0 */
                                                                                                                                       /* Ext Flags: new corr
                                                                                                                 0x7
/* 12 */
          NdrFcShort( 0x8 ),
                                 /* 8 */
                                                                                desc, clt corr check, srv corr check, */
/* 14 */
          0x47,
                                 /* Oi2 Flags: srv must size, clt must size, has
                                                                                /* 62 */
                                                                                           NdrFcShort( 0x20 ), /* 32 */
                                                                                /* 64 */
return, has ext, */
                                                                                           NdrFcShort( 0x20 ), /* 32 */
                                                                                /* 66 */
                                                                                           NdrFcShort( 0x0 ), /* 0 */
                                 0x3,
                                                       /* 3 */
                                 /* 10 */
/* 16 */ 0xa,
                                                                                /* 68 */
                                                                                           NdrFcShort( 0x0 ), /* 0 */
                                 0x7,
                                                       /* Ext Flags: new corr
desc, clt corr check, srv corr check, */
                                                                                           /* Parameter txn in */
/* 18 */
          NdrFcShort( 0x20 ), /* 32 */
/* 20 */
          NdrFcShort( 0x20 ), /* 32 */
                                                                                /* 70 */
                                                                                           NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
/* 22 */
          NdrFcShort( 0x0 ), /* 0 */
                                                                                #ifndef ALPHA
/* 24 */
          NdrFcShort( 0x0 ),
                               /* 0 */
                                                                                /* 72 */
                                                                                           NdrFcShort(0x10), /* ia64 Stack size/offset = 16 */
                                                                                #else
           /* Parameter txn_in */
                                                                                                                 NdrFcShort( 0x8 ), /* axp64 Stack
                                                                                size/offset = 8 */
/* 26 */
          NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
                                                                                #endif
                                                                                           NdrFcShort( 0x3b6 ), /* Type Offset=950 */
#ifndef _ALPHA
                                                                                /* 74 */
/* 28 */
          NdrFcShort(0x10), /* ia64 Stack size/offset = 16 */
#else
                                                                                           /* Parameter txn out */
                                 NdrFcShort( 0x8 ), /* axp64 Stack
size/offset = 8 */
                                                                                /* 76 */
                                                                                           NdrFcShort( 0x6113 ),
                                                                                                                            /* Flags: must size, must free, out,
#endif
                                                                                simple ref, srv alloc size=24 */
                                                                                #ifindef _ALPHA_ /* 78 */ NdrFcShort( 0x28 ), /* ia64 Stack size/offset = 40 */
/* 30 */
          NdrFcShort( 0x3b6 ), /* Type Offset=950 */
           /* Parameter txn out */
                                                                                #else
                                                                                                                 NdrFcShort(0x20), /* axp64 Stack
/* 32 */
          NdrFcShort( 0x6113 ),
                                           /* Flags: must size, must free, out,
                                                                                size/offset = 32 */
simple ref, srv alloc size=24 */
                                                                                #endif
#ifndef _ALPHA
                                                                                /* 80 */
                                                                                           NdrFcShort( 0x3c8 ), /* Type Offset=968 */
/* 34 */
          NdrFcShort( 0x28 ), /* ia64 Stack size/offset = 40 */
                                                                                           /* Return value */
#else
                                 NdrFcShort( 0x20 ), /* axp64 Stack
                                                                                /* 82 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
size/offset = 32 */
#endif
                                                                                #ifndef ALPHA
          NdrFcShort( 0x3c8 ), /* Type Offset=968 */
                                                                                 /* 84 */
                                                                                           NdrFcShort( 0x30 ), /* ia64 Stack size/offset = 48 */
/* 36 */
                                                                                #else
           /* Return value */
                                                                                                                 NdrFcShort(0x28), /* axp64 Stack
                                                                                size/offset = 40 */
/* 38 */
          NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
                                                                                #endif
                                                                                /* 86 */
#ifndef _ALPHA
                                                                                           0x8
                                                                                                                 /* FC_LONG */
          NdrFcShort( 0x30 ), /* ia64 Stack size/offset = 48 */
                                                                                                                                       /* 0 */
                                                                                                                 0x0,
#else
                                 NdrFcShort( 0x28 ), /* axp64 Stack
                                                                                           /* Procedure Delivery */
size/offset = 40 */
                                                                                /* 88 */
                                                                                                                 /* FC_AUTO HANDLE */
#endif
                                                                                           0x33.
/* 42 */
                                 /* FC LONG */
                                                                                                                                       /* Old Flags: object,
          0x8,
                                                       /* 0 */
                                                                                Oi2 */
                                 0x0.
                                                                                /* 90 */
                                                                                                                 /* 0 */
                                                                                           NdrFcLong( 0x0),
                                                                                /* 94 */
           /* Procedure Payment */
                                                                                           NdrFcShort( 0x5 ),
                                                                                                                 /* 5 */
                                                                                #ifndef _ALPHA_
/* 44 */
                                 /* FC AUTO HANDLE */
                                                                                           NdrFcShort(0x38), /* ia64 Stack size/offset = 56 */
          0x33,
                                                                                /* 96 */
                                                       /* Old Flags: object,
                                                                                #else
                                 0x6c,
Oi2 */
                                                                                                                 NdrFcShort( 0x30 ), /* axp64 Stack
                                                                                size/offset = 48 */
/* 46 */
          NdrFcLong( 0x0 ),
                                /* 0 */
/* 50 */
          NdrFcShort( 0x4 ),
                                                                                #endif
                                                                                 /* 98 */
                                                                                                                 /* 0 */
#ifndef _ALPHA
                                                                                           NdrFcShort( 0x0 ),
                                                                                /* 100 */ NdrFcShort( 0x8 ),
/* 52 */<sup>-</sup>
          NdrFcShort( 0x38 ), /* ia64 Stack size/offset = 56 */
                                                                                                                 /* 8 */
#else
                                                                                 /* 102 */ 0x47,
                                                                                                                 /* Oi2 Flags: srv must size, clt must size, has
                                 NdrFcShort( 0x30 ), /* axp64 Stack
                                                                                return, has ext, */
size/offset = 48 */
                                                                                                                 0x3,
                                                                                                                                       /* 3 */
                                                                                /* 104 */ 0xa.
                                                                                                                 /* 10 */
#endif
/* 54 */
          NdrFcShort( 0x0 ),
                                /* 0 */
                                                                                                                 0x7,
                                                                                                                                       /* Ext Flags: new corr
                                /* 8 */
/* 56 */
                                                                                desc, clt corr check, srv corr check, */
          NdrFcShort( 0x8 ),
                                                                                 /* 106 */ NdrFcShort( 0x20 ), /* 32 */
```

```
/* 108 */ NdrFcShort( 0x20 ), /* 32 */
                                                                               #ifndef ALPHA
/* 110 */ NdrFcShort( 0x0 ), /* 0 */
                                                                               /* 160 */ NdrFcShort( 0x10 ), /* ia64 Stack size/offset = 16 */
/* 112 */ NdrFcShort( 0x0 ), /* 0 */
                                                                                                               NdrFcShort( 0x8 ), /* axp64 Stack
                                                                               size/offset = 8 */
          /* Parameter txn_in */
                                                                               #endif
/* 114 */ NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
                                                                               /* 162 */ NdrFcShort( 0x3b6 ), /* Type Offset=950 */
#ifndef ALPHA
/* 116 */ NdrFcShort( 0x10 ), /* ia64 Stack size/offset = 16 */
                                                                                         /* Parameter txn out */
#else
                                NdrFcShort( 0x8 ), /* axp64 Stack
                                                                               /* 164 */ NdrFcShort( 0x6113 ),
                                                                                                                          /* Flags: must size, must free, out,
size/offset = 8 */
                                                                               simple ref, srv alloc size=24 */
                                                                               #ifndef ALPHA
/* 118 */ NdrFcShort( 0x3b6 ), /* Type Offset=950 */
                                                                               /* 166 * \overline{/} NdrFcShort(0x28), /* ia64 Stack size/offset = 40 */
                                                                               #else
           /* Parameter txn out */
                                                                                                               NdrFcShort(0x20), /* axp64 Stack
                                                                               size/offset = 32 */
/* 120 */ NdrFcShort( 0x6113 ),
                                           /* Flags: must size, must free, out,
                                                                               #endif
simple ref, srv alloc size=24 */
                                                                               /* 168 */ NdrFcShort( 0x3c8 ), /* Type Offset=968 */
#ifndef ALPHA
/* 122 */ NdrFcShort( 0x28 ), /* ia64 Stack size/offset = 40 */
                                                                                         /* Return value */
#else
                                NdrFcShort( 0x20 ), /* axp64 Stack
                                                                               /* 170 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
size/offset = 32 */
                                                                               #ifndef ALPHA
                                                                               /* 172 */ NdrFcShort( 0x30 ), /* ia64 Stack size/offset = 48 */
#endif
/* 124 */ NdrFcShort( 0x3c8 ), /* Type Offset=968 */
                                                                               #else
                                                                                                               NdrFcShort(0x28), /* axp64 Stack
          /* Return value */
                                                                               size/offset = 40 */
                                                                               #endif
/* 126 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
                                                                               /* 174 */ 0x8
                                                                                                               /* FC LONG */
#ifndef ALPHA
                                                                                                               0x0,
                                                                                                                                     /* 0 */
/* 128 */ NdrFcShort( 0x30 ), /* ia64 Stack size/offset = 48 */
                                                                                         /* Procedure OrderStatus */
#else
                                NdrFcShort(0x28), /* axp64 Stack
size/offset = 40 */
                                                                               /* 176 */ 0x33,
                                                                                                               /* FC_AUTO_HANDLE */
                                                                                                                                     /* Old Flags: object,
#endif
                                                                                                               0x6c,
/* 130 */ 0x8.
                                                                               Oi2 */
                                /* FC LONG */
                                0x0,
                                                      /* 0 */
                                                                               /* 178 */ NdrFcLong( 0x0 ),
                                                                                                              /* () */
                                                                               /* 182 */ NdrFcShort( 0x7 ),
                                                                                                              /* 7 */
          /* Procedure StockLevel */
                                                                               #ifndef _ALPHA_
                                                                               /* 184 */ NdrFcShort( 0x38 ), /* ia64 Stack size/offset = 56 */
/* 132 */ 0x33,
                                /* FC_AUTO_HANDLE */
                                                                               #else
                                                                                                               NdrFcShort( 0x30 ), /* axp64 Stack
                                                      /* Old Flags: object,
                                0x6c,
Oi2 */
                                                                               size/offset = 48 */
/* 134 */ NdrFcLong( 0x0 ),
                                /* 0 */
                                                                               #endif
                                                                               /* 186 */ NdrFcShort( 0x0 ),
/* 138 */ NdrFcShort( 0x6 ),
                                /* 6 */
                                                                                                               /* 0 */
#ifndef _ALPHA_
                                                                               /* 188 */ NdrFcShort( 0x8 ),
                                                                                                               /* 8 */
/* 140 */ NdrFcShort( 0x38 ), /* ia64 Stack size/offset = 56 */
                                                                               /* 190 */ 0x47,
                                                                                                               /* Oi2 Flags: srv must size, clt must size, has
                                                                               return, has ext, */
#else
                                NdrFcShort( 0x30 ), /* axp64 Stack
                                                                                                                                     /* 3 */
                                                                                                               0x3,
                                                                                                               /* 10 */
                                                                               /* 192 */ 0xa,
size/offset = 48 */
#endif
                                                                                                               0x7,
                                                                                                                                     /* Ext Flags: new corr
/* 142 */ NdrFcShort( 0x0 ),
                                /* 0 */
                                                                               desc, clt corr check, srv corr check, */
/* 144 */ NdrFcShort( 0x8 ),
                                /* 8 */
                                                                               /* 194 */ NdrFcShort( 0x20 ), /* 32 */
/* 146 */ 0x47,
                                                                               /* 196 */ NdrFcShort( 0x20 ), /* 32 */
                                /* Oi2 Flags: srv must size, clt must size, has
                                                                               /* 198 */ NdrFcShort( 0x0 ), /* 0 */
return, has ext, */
                                                      /* 3 */
                                                                               /* 200 */ NdrFcShort( 0x0 ),
                                0x3,
                                /* 10 */
/* 148 */ 0xa,
                                0x7,
                                                      /* Ext Flags: new corr
                                                                                         /* Parameter txn in */
desc, clt corr check, srv corr check, */
/* 150 */ NdrFcShort( 0x20 ), /* 32 */
                                                                               /* 202 */ NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
/* 152 */ NdrFcShort( 0x20 ), /* 32 */
                                                                               #ifndef ALPHA
/* 154 */ NdrFcShort( 0x0 ), /* 0 */
                                                                               /* 204 */ NdrFcShort( 0x10 ), /* ia64 Stack size/offset = 16 */
/* 156 */ NdrFcShort( 0x0 ),
                                                                               #else
                                                                                                               NdrFcShort( 0x8 ), /* axp64 Stack
          /* Parameter txn in */
                                                                               size/offset = 8 */
                                                                               #endif
/* 158 */ NdrFcShort( 0x8b ), /* Flags: must size, must free, in, by val, */
                                                                               /* 206 */ NdrFcShort( 0x3b6 ), /* Type Offset=950 */
```

```
/* 8 */
                                                                                                              /* Corr desc: FC USHORT */
                                                                                         0x7,
          /* Parameter txn out */
                                                                                                              0x0,
                                                                                        NdrFcShort( 0xfff8 ), /* -8 */
                                                                              /* 10 */
                                                                              /* 12 */
                                                                                                             /* Corr flags: early, */
/* 208 */ NdrFcShort( 0x6113 ),
                                          /* Flags: must size, must free, out,
                                                                                         NdrFcShort(0x1),
simple ref, srv alloc size=24 */
                                                                              /* 14 */
                                                                                         NdrFcShort( 0x2 ),
                                                                                                             /* Offset= 2 (16) */
#ifndef ALPHA
                                                                              /* 16 */
                                                                                         NdrFcShort( 0x10 ), /* 16 */
/* 210 */ NdrFcShort( 0x28 ), /* ia64 Stack size/offset = 40 */
                                                                              /* 18 */
                                                                                         NdrFcShort( 0x2b ), /* 43 */
                                                                              /* 20 */
#else
                                                                                         NdrFcLong(0x3),
                                                                              /* 24 */
                                NdrFcShort(0x20), /* axp64 Stack
                                                                                         NdrFcShort( 0x8008 ),
                                                                                                                        /* Simple arm type: FC LONG */
size/offset = 32 */
                                                                              /* 26 */
                                                                                         NdrFcLong( 0x11 ), /* 17 */
                                                                              /* 30 */
#endif
                                                                                         NdrFcShort( 0x8001 ),
                                                                                                                        /* Simple arm type: FC_BYTE */
/* 212 */ NdrFcShort( 0x3c8 ), /* Type Offset=968 */
                                                                              /* 32 */
                                                                                         NdrFcLong( 0x2 ),
                                                                              /* 36 */
                                                                                         NdrFcShort( 0x8006),
                                                                                                                        /* Simple arm type: FC SHORT */
                                                                              /* 38 */
          /* Return value */
                                                                                         NdrFcLong(0x4),
                                                                              /* 42 */
                                                                                         NdrFcShort( 0x800a ),
                                                                                                                        /* Simple arm type: FC_FLOAT */
                                                                              /* 44 */
                                                                                                              /* 5 */
/* 214 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
                                                                                         NdrFcLong( 0x5 ),
#ifndef ALPHA
                                                                              /* 48 */
                                                                                        NdrFcShort( 0x800c),
                                                                                                                        /* Simple arm type: FC DOUBLE
/* 216 */ NdrFcShort( 0x30 ), /* ia64 Stack size/offset = 48 */
                                                                              /* 50 */
                                                                                         NdrFcLong( 0xb ),
#else
                                NdrFcShort(0x28), /* axp64 Stack
                                                                              /* 54 */
                                                                                         NdrFcShort( 0x8006 ),
                                                                                                                        /* Simple arm type: FC SHORT */
size/offset = 40 */
                                                                              /* 56 */
                                                                                                              /* 10 */
                                                                                         NdrFcLong( 0xa ),
                                                                              /* 60 */
                                                                                         NdrFcShort( 0x8008 ),
                                                                                                                         /* Simple arm type: FC LONG */
#endif
/* 218 */ 0x8.
                                /* FC LONG */
                                                                              /* 62 */
                                                                                         NdrFcLong( 0x6),
                                                     /* 0 */
                                                                              /* 66 */
                                                                                         NdrFcShort( 0xd6 ), /* Offset= 214 (280) */
                                0x0.
                                                                                                             /* 7 */
                                                                              /* 68 */
                                                                                         NdrFcLong(0x7),
           /* Procedure CallSetComplete */
                                                                              /* 72 */
                                                                                        NdrFcShort( 0x800c),
                                                                                                                        /* Simple arm type: FC_DOUBLE
/* 220 */ 0x33,
                                /* FC_AUTO_HANDLE */
                                                                              /* 74 */
                                                                                        NdrFcLong( 0x8 ),
                                0x6c,
                                                     /* Old Flags: object,
                                                                              /* 78 */
                                                                                         NdrFcShort( 0xd0 ), /* Offset= 208 (286) */
Oi2 */
                                                                              /* 80 */
                                                                                         NdrFcLong( 0xd ),
                                                                                                              /* 13 */
/* 222 */
          NdrFcLong(0x0),
                                /* 0 */
                                                                              /* 84 */
                                                                                         NdrFcShort( 0xe4 ), /* Offset= 228 (312) */
                                                                                                             /* 9 */
/* 226 */
                                /* 8 */
                                                                              /* 86 */
          NdrFcShort(0x8),
                                                                                         NdrFcLong( 0x9 ),
/* 228 */
          NdrFcShort( 0x10 ),
                               /* ia64, axp64 Stack size/offset = 16 */
                                                                              /* 90 */
                                                                                         NdrFcShort( 0xf0 ), /* Offset= 240 (330) */
/* 230 */
          NdrFcShort( 0x0 ),
                                /* 0 */
                                                                              /* 92 */
                                                                                         NdrFcLong(0x2000),
                                                                                                                        /* 8192 */
                                                                                         NdrFcShort( 0xfc ), /* Offset= 252 (348) */
/* 232 */
          NdrFcShort( 0x8 ),
                               /* 8 */
                                                                              /* 96 */
/* 234 */ 0x44,
                                /* Oi2 Flags: has return, has ext, */
                                                                              /* 98 */
                                                                                         NdrFcLong( 0x24 ), /* 36 */
                                                                                        NdrFcShort( 0x2f4 ), /* Offset= 756 (858) */
                                                                              /* 102 */
                                0x1
                                                     /* 1 */
                                                                              /* 104 */
                                /* 10 */
/* 236 */ 0xa,
                                                                                         NdrFcLong(0x4024),
                                                                                                                        /* 16420 */
                                                                              /* 108 */
                                                                                        NdrFcShort( 0x2ee ), /* Offset= 750 (858) */
                                0x1,
                                                     /* Ext Flags: new corr
                                                                              /* 110 */
                                                                                        NdrFcLong(0x4011),
desc, */
                                                                                                                        /* 16401 */
/* 238 */
          NdrFcShort( 0x0 ),
                                /* 0 */
                                                                              /* 114 */
                                                                                         NdrFcShort( 0x2ec ), /* Offset= 748 (862) */
/* 240 */
                                /* 0 */
                                                                              /* 116 */
          NdrFcShort( 0x0 ),
                                                                                        NdrFcLong(0x4002),
                                                                                                                        /* 16386 */
/* 242 */
          NdrFcShort( 0x0 ),
                                /* 0 */
                                                                              /* 120 */
                                                                                         NdrFcShort( 0x2ea ), /* Offset= 746 (866) */
                                /* 0 */
          NdrFcShort( 0x0 ),
                                                                              /* 122 */
                                                                                         NdrFcLong(0x4003),
/* 244 */
                                                                                                                        /* 16387 */
                                                                                         NdrFcShort( 0x2e8 ), /* Offset= 744 (870) */
                                                                              /* 126 */
                                                                              /* 128 */
           /* Return value */
                                                                                        NdrFcLong( 0x4004 ),
                                                                                                                        /* 16388 */
                                                                              /* 132 */
                                                                                        NdrFcShort( 0x2e6 ), /* Offset= 742 (874) */
/* 246 */ NdrFcShort( 0x70 ), /* Flags: out, return, base type, */
                                                                              /* 134 */
                                                                                         NdrFcLong(0x4005),
                                                                                                                        /* 16389 */
                               /* ia64, axp64 Stack size/offset = 8 */
                                                                                        NdrFcShort( 0x2e4 ), /* Offset= 740 (878) */
/* 248 */
          NdrFcShort( 0x8 ),
                                                                              /* 138 */
/* 250 */ 0x8,
                                /* FC LONG */
                                                                              /* 140 */
                                                                                         NdrFcLong(0x400b),
                                                                                                                         /* 16395 */
                                                                                        NdrFcShort( 0x2d2 ), /* Offset= 722 (866) */
                                                     /* 0 */
                                                                              /* 144 */
                                0x0.
                                                                                        NdrFcLong(0x400a),
                                                                              /* 146 */
                                                                                                                        /* 16394 */
                                                                              /* 150 */
                                                                                         NdrFcShort( 0x2d0 ), /* Offset= 720 (870) */
                                0x0
                                                                              /* 152 */
                                                                                         NdrFcLong(0x4006),
                                                                                                                        /* 16390 */
    }
                                                                                        NdrFcShort( 0x2d6 ), /* Offset= 726 (882) */
                                                                              /* 156 */
                                                                              /* 158 */
                                                                                        NdrFcLong( 0x4007),
                                                                                                                        /* 16391 */
static const MIDL TYPE FORMAT STRING MIDL TypeFormatString =
                                                                              /* 162 */
                                                                                         NdrFcShort( 0x2cc ), /* Offset= 716 (878) */
                                                                                         NdrFcLong( 0x4008 ),
                                                                              /* 164 */
                                                                                                                        /* 16392 */
    0,
                                                                                         NdrFcShort( 0x2ce ), /* Offset= 718 (886) */
                                                                              /* 168 */
                                                                              /* 170 */
                                                                                        NdrFcLong( 0x400d ),
                                                                                                                        /* 16397 */
                                NdrFcShort( 0x0 ), /* 0 */
                                                                              /* 174 */
                                                                                        NdrFcShort( 0x2cc ), /* Offset= 716 (890) */
/* 2 */
                                                                              /* 176 */
                                                                                         NdrFcLong(0x4009),
                                                                                                                        /* 16393 */
                                0x12, 0x0, /* FC UP */
                                                                              /* 180 */
                                                                                         NdrFcShort( 0x2ca ), /* Offset= 714 (894) */
/* 4 */
           NdrFcShort( 0x39e ), /* Offset= 926 (930) */
                                                                              /* 182 */
                                                                                        NdrFcLong( 0x6000 ),
                                                                                                                        /* 24576 */
                                                                              /* 186 */
/* 6 */
                                                                                        NdrFcShort( 0x2c8 ), /* Offset= 712 (898) */
                                0x2b,
                                                                              /* 188 */
                                                                                        NdrFcLong( 0x400c),
                                                                                                                        /* 16396 */
FC_NON_ENCAPSULATED_UNION */
                                                                                        NdrFcShort( 0x2c6 ), /* Offset= 710 (902) */
                                                                              /* 192 */
                                                     /* FC_ULONG */
                                0x9
                                                                              /* 194 */ NdrFcLong( 0x10 ), /* 16 */
```

```
/* 198 */ NdrFcShort( 0x8002 ),
                                                                                                                                  /* 0 */
                                          /* Simple arm type: FC_CHAR */
                                                                                                             0x0
          NdrFcLong( 0x12 ), /* 18 */
                                                                              /* 328 */ 0x0,
                                                                                                             /* 0 */
/* 200 */
/* 204 */
          NdrFcShort( 0x8006),
                                          /* Simple arm type: FC SHORT */
                                                                                                             0x46,
                                                                                                                                  /* 70 */
/* 206 */
          NdrFcLong( 0x13 ), /* 19 */
                                                                             /* 330 */
/* 210 */ NdrFcShort( 0x8008 ),
                                          /* Simple arm type: FC_LONG */
                                                                                                             0x2f.
                                                                                                                                  /* FC IP */
          NdrFcLong( 0x16 ), /* 22 */
/* 212 */
                                                                                                             0x5a,
/* 216 */
          NdrFcShort( 0x8008 ),
                                          /* Simple arm type: FC LONG */
                                                                             FC CONSTANT IID */
/* 218 */
          NdrFcLong( 0x17 ), /* 23 */
                                                                             /* 332 */ NdrFcLong( 0x20400 ),
                                                                                                                        /* 132096 */
                                                                             /* 336 */ NdrFcShort( 0x0 ),
                                                                                                             /* 0 */
/* 222 */
          NdrFcShort( 0x8008),
                                          /* Simple arm type: FC LONG */
/* 224 */
          NdrFcLong( 0xe ), /* 14 */
                                                                             /* 338 */ NdrFcShort( 0x0 ),
                                                                                                             /* 0 */
          NdrFcShort( 0x2aa ), /* Offset= 682 (910) */
                                                                             /* 340 */ 0xc0,
                                                                                                             /* 192 */
/* 228 */
/* 230 */
          NdrFcLong( 0x400e ),
                                          /* 16398 */
                                                                                                             0x0.
                                                                                                                                  /* 0 */
          NdrFcShort( 0x2b0 ), /* Offset= 688 (922) */
/* 234 */
                                                                             /* 342 */ 0x0,
                                                                                                             /* 0 */
/* 236 */
          NdrFcLong( 0x4010 ),
                                          /* 16400 */
                                                                                                             0x0
                                                                                                                                  /* 0 */
/* 240 */
          NdrFcShort( 0x2ae ), /* Offset= 686 (926) */
                                                                             /* 344 */ 0x0,
                                                                                                             /* 0 */
/* 242 */
          NdrFcLong(0x4012),
                                          /* 16402 */
                                                                                                             0x0,
                                                                                                                                  /* 0 */
          NdrFcShort( 0x26c ), /* Offset= 620 (866) */
                                                                                                             /* 0 */
/* 246 */
                                                                             /* 346 */ 0x0,
/* 248 */
          NdrFcLong( 0x4013 ),
                                          /* 16403 */
                                                                                                             0x46,
                                                                                                                                  /* 70 */
/* 252 */
          NdrFcShort( 0x26a ), /* Offset= 618 (870) */
                                                                             /* 348 */
/* 254 */
          NdrFcLong(0x4016),
                                          /* 16406 */
                                                                                                             0x12, 0x10,
                                                                                                                                  /* FC UP
          NdrFcShort( 0x264 ), /* Offset= 612 (870) */
/* 258 */
                                                                             [pointer_deref] */
/* 260 */
          NdrFcLong(0x4017),
                                                                              /* 350 */ NdrFcShort( 0x2 ),
                                                                                                             /* Offset= 2 (352) */
                                          /* 16407 */
/* 264 */
          NdrFcShort( 0x25e ), /* Offset= 606 (870) */
                                                                             /* 352 */
/* 266 */
          NdrFcLong( 0x0 ), /* 0 */
                                                                                                             0x12, 0x0, /* FC UP */
/* 270 */
          NdrFcShort( 0x0 ),
                               /* Offset= 0 (270) */
                                                                             /* 354 */ NdrFcShort( 0x1e6 ), /* Offset= 486 (840) */
          NdrFcLong( 0x1 ),
/* 272 */
                               /* 1 */
                                                                             /* 356 */
/* 276 */
          NdrFcShort( 0x0 ),
                               /* Offset= 0 (276) */
                                                                                                             0x2a,
/* 278 */
                                                                             FC_ENCAPSULATED_UNION */
          NdrFcShort( 0xffffffff ),
                                          /* Offset= -1 (277) */
/* 280 */
                                                                                                             0x89.
                                                                                                                                  /* 137 */
                                                    /* FC STRUCT */
                                                                             /* 358 */ NdrFcShort( 0x20 ), /* 32 */
                               0x15.
                               0x7,
                                                     /* 7 */
                                                                             /* 360 */
                                                                                        NdrFcShort( 0xa ),
                                                                                                            /* 10 */
                               /* 8 */
                                                                             /* 362 */
                                                                                                             /* 8 */
/* 282 */ NdrFcShort( 0x8 ),
                                                                                        NdrFcLong( 0x8 ),
/* 284 */ 0xb.
                               /* FC HYPER */
                                                                             /* 366 */
                                                                                        NdrFcShort( 0x50 ), /* Offset= 80 (446) */
                                                     /* FC END */
                                                                             /* 368 */
                                                                                        NdrFcLong( 0xd ), /* 13 */
/* 286 */
                                                                             /* 372 */
                                                                                        NdrFcShort( 0x70 ), /* Offset= 112 (484) */
                               0x12, 0x0, /* FC UP */
                                                                             /* 374 */
                                                                                        NdrFcLong( 0x9 ), /* 9 */
                                                                             /* 378 */
                                                                                        NdrFcShort( 0x90 ), /* Offset= 144 (522) */
/* 288 */ NdrFcShort( 0xe ),
                               /* Offset= 14 (302) */
                                                                             /* 380 */
                                                                                        NdrFcLong( 0xc ), /* 12 */
/* 290 */
                                                    /* FC_CARRAY */
                                                                             /* 384 */
                                                                                        NdrFcShort( 0xb0 ), /* Offset= 176 (560) */
                               0x1b,
                                                    /* 1 */
                                                                             /* 386 */
                                                                                        NdrFcLong( 0x24 ), /* 36 */
                               0x1
                               /* 2 */
/* 292 */ NdrFcShort( 0x2 ),
                                                                             /* 390 */
                                                                                        NdrFcShort( 0x104 ), /* Offset= 260 (650) */
                               /* Corr desc: FC_ULONG */
                                                                             /* 392 */
                                                                                        NdrFcLong( 0x800d ),
/* 294 */ 0x9,
                                                                                                                        /* 32781 */
                                                                             /* 396 */
                                                                                        NdrFcShort( 0x120 ), /* Offset= 288 (684) */
                               0x0,
                                                                             /* 398 */
                                                                                        NdrFcLong( 0x10 ), /* 16 */
/* 296 */ NdrFcShort( 0xfffc ), /* -4 */
                               /* Corr flags: early, */
                                                                              /* 402 */
                                                                                        NdrFcShort( 0x13a ), /* Offset= 314 (716) */
/* 298 */ NdrFcShort( 0x1 ),
/* 300 */ 0x6,
                                                                             /* 404 */
                                                                                        NdrFcLong( 0x2 ), /* 2 */
                               /* FC_SHORT */
                               0x5b.
                                                     /* FC END */
                                                                             /* 408 */
                                                                                        NdrFcShort( 0x150 ), /* Offset= 336 (744) */
/* 302 */
                                                                             /* 410 */
                                                                                        NdrFcLong( 0x3 ), /* 3 */
                                                                             /* 414 */
                                                                                        NdrFcShort( 0x166 ), /* Offset= 358 (772) */
                               0x17,
                                                     /* FC_CSTRUCT */
                                                     /* 3 */
                                                                             /* 416 */
                                                                                        NdrFcLong( 0x14 ), /* 20 */
                               0x3,
                                                                                        NdrFcShort( 0x17c ), /* Offset= 380 (800) */
/* 304 */ NdrFcShort( 0x8 ),
                               /* 8 */
                                                                             /* 420 */
/* 306 */ NdrFcShort( 0xfffffff0 ),
                                                                             /* 422 */
                                          /* Offset= -16 (290) */
                                                                                       NdrFcShort( 0xffffffff ),
                                                                                                                        /* Offset= -1 (421) */
/* 308 */ 0x8,
                               /* FC_LONG */
                                                                             /* 424 */
                                                     /* FC LONG */
                                                                                                             0x21,
                               0x8.
                               /* FC PAD */
                                                                             FC BOGUS ARRAY */
/* 310 */ 0x5c,
                                                     /* FC_END */
                                                                                                                                  /* 3 */
                               0x5b,
                                                                                                             0x3.
/* 312 */
                                                                             /* 426 */ NdrFcShort( 0x0 ),
                                                                                                             /* 0 */
                                                                             /* 428 */ 0x19,
                               0x2f
                                                     /* FC_IP */
                                                                                                             /* Corr desc: field pointer, FC_ULONG */
                               0x5a,
                                                                                                             0x0,
                                                                             /* 430 */ NdrFcShort( 0x0 ),
                                                                                                             /* 0 */
FC_CONSTANT_IID */
                                                                                                             /* Corr flags: early, */
/* 314 */ NdrFcLong( 0x0 ),
                               /* 0 */
                                                                             /* 432 */
                                                                                        NdrFcShort( 0x1 ),
                                                                             /* 434 */
/* 318 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                                        NdrFcLong( 0xffffffff ),
/* 320 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                             /* 438 */
                                                                                        NdrFcShort( 0x0 ), /* Corr flags: */
/* 322 */ 0xc0,
                               /* 192 */
                                                                             /* 440 */
                               0x0,
                                                    /* 0 */
                                                                                                             0x12, 0x0, /* FC UP */
/* 324 */ 0x0,
                               /* 0 */
                                                                             /* 442 */ NdrFcShort( 0xffffff74 ),
                                                                                                                        /* Offset= -140 (302) */
                                                                             /* 444 */ 0x5c,
                                                                                                             /* FC_PAD */
                                                     /* 0 */
                               0x0,
/* 326 */ 0x0,
                               /* 0 */
                                                                                                             0x5b,
                                                                                                                                  /* FC END */
```

(sh. 4.4.6 sh.)			1		0.20	/* EG ALIGNBA0 */
/* 446 */	Ov.10	/ <b>*</b>	/* 522 */	026	0x39,	/* FC_ALIGNM8 */
FC_BOGUS_STRUCT */	0x1a,	/.	/* 532 */	0x30,	/* FC_POINTER */ 0x5b,	/* FC END */
re_bodos_street /	0x3,	/* 3 */	/* 534 */		0x30,	/ FC_END /
/* 448 */ NdrFcShort( 0x10 )		, 3 ,	, 55. ,		0x11, 0x0, /* FC RP	*/
/* 450 */ NdrFcShort( 0x0 ),	/* 0 */		/ <b>*</b> 536 <b>*</b> /	NdrFcShort( 0xffffff6		-36 (500) */
/* 452 */ NdrFcShort( 0x6 ),	/* Offset= 6 (458) */		/* 538 */	`	**	,
/* 454 */ 0x8,	/* FC_LONG */				0x21,	<b>/*</b>
	0x39,	/* FC_ALIGNM8 */	FC_BOG	US_ARRAY */		
/* 456 */ 0x36,	/* FC_POINTER */				0x3,	/* 3 */
/* 450 */	0x5b,	/* FC_END */		NdrFcShort( 0x0 ),	/* 0 */	· · · · · · · · · · · · · · · · · · ·
/* 458 */	0x11, 0x0, /* FC RF	<b>)</b> */	/* 542 */	0X19,	0x0,	ointer, FC_ULONG */ /* */
/* 460 */ NdrFcShort( 0xfffff		= -36 (424) */	/* 5/\ld */	NdrFcShort( 0x0 ),	/* 0 */	7/
/* 462 */	ide), / Offset	-30 (424) /	/* 546 */		/* Corr flags: early, *	<b>k</b> /
, 102 ,	0x21,	<b>/*</b>	/* 548 */	\ //		,
FC_BOGUS_ARRAY */	******		/* 552 */		/* Corr flags: */	
	0x3,	/* 3 */	/* 554 */			
/* 464 */ NdrFcShort( 0x0 ),	/ <b>*</b> 0 <b>*</b> /				0x12, 0x0, /* FC_UP	
/* 466 */ 0x19,	/* Corr desc: field p	ointer, FC_ULONG */		NdrFcShort( 0x176 ),		*/
	0x0,	/ <b>*</b> */	/* 558 <b>*</b> /	0x5c,	/* FC_PAD */	
/* 468 */ NdrFcShort( 0x0 ),	/* 0 */	<b>*</b> /	/# F C O # /		0x5b,	/* FC_END */
/* 470 */ NdrFcShort( 0x1 ),	/* Corr flags: early,	*/	/* 560 */		01-	/*
/* 472 */ NdrFcLong( 0xfffff /* 476 */ NdrFcShort( 0x0 ),	ffff ), /* -1 */ /* Corr flags: */		EC POG	US_STRUCT */	0x1a,	/*
/* 478 */ 0x4c,	/* FC EMBEDDED	COMPLEX */	rc_boo	US_STRUCT 7	0x3,	/* 3 */
/ 470 / OA4C,	0x0,	_/* 0 */	/* 562 */	NdrFcShort( 0x10 ),	/* 16 */	7 3 7
/* 480 */ NdrFcShort( 0xfffff		= -168 (312) */		NdrFcShort( 0x0 ),	/* 0 */	
/* 482 */ 0x5c,	/* FC PAD */	(- )	/ <b>*</b> 566 <b>*</b> /		/* Offset= 6 (572) */	
	0x5b,	/* FC_END */	/* 568 */	0x8,	/* FC_LONG */	
/* 484 */					0x39,	/* FC_ALIGNM8 */
	0x1a,	<b>/*</b>	/ <b>*</b> 570 <b>*</b> /	0x36,	/* FC_POINTER */	
FC_BOGUS_STRUCT */					0x5b,	/* FC_END */
	0x3,	/* 3 */	/* 572 */			
/* 406 */ NIE GL ((0.10)		, 5 ,	, 0,2		0 11 0 0 / FG DD	ste /
/* 486 */ NdrFcShort( 0x10 )	, /* 16 */	, 3 ,		NdwEach aut ( Ov. fffff	0x11, 0x0, /* FC_RP	
/* 488 */ NdrFcShort( 0x0 ),	, /* 16 */ /* 0 */		/* 574 */	NdrFcShort( 0xffffff6		*/ :-36 (538) */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ),	, /* 16 */ /* 0 */ /* Offset= 6 (496) */			NdrFcShort( 0xffffff6	dc), /* Offset=	: -36 (538) */
/* 488 */ NdrFcShort( 0x0 ),	, /* 16 */ /* 0 */ /* Offset= 6 (496) */ /* FC_LONG */		/* 574 */	NdrFcShort( 0xffffff6	0x2f, /* Offset=	
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8,	, /* 16 */ /* 0 */ /* Offset= 6 (496) */ /* FC_LONG */ 0x39,		/* 574 */ /* 576 */		dc), /* Offset=	-36 (538) */ /* FC_IP */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ),	, /* 16 */ /* 0 */ /* Offset= 6 (496) */ /* FC_LONG */		/* 574 */ /* 576 */ FC_CON	NdrFcShort( 0xfffffff STANT_IID */ NdrFcLong( 0x2f ),	0x2f, /* Offset=	-36 (538) */ /* FC_IP */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8,	, /* 16 */ /* 0 */ /* Offset= 6 (496) */ /* FC_LONG */ 0x39, /* FC_POINTER */ 0x5b,	/* FC_ALIGNM8 */ /* FC_END */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ),	0x2f, 0x5a, /* 47 */ /* 0 */	-36 (538) */ /* FC_IP */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */	, /* 16 */ /* 0 */ /* Offset= 6 (496) */ /* FC_LONG */ 0x39, /* FC_POINTER */ 0x5b, 0x11, 0x0, /* FC_RF	/* FC_ALIGNM8 */ /* FC_END */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 584 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ),	0x2f, 0x5a, /* 47 */ /* 0 */ /* 0 */	-36 (538) */ /* FC_IP */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff	, /* 16 */ /* 0 */ /* Offset= 6 (496) */ /* FC_LONG */ 0x39, /* FC_POINTER */ 0x5b, 0x11, 0x0, /* FC_RF	/* FC_ALIGNM8 */ /* FC_END */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ),	0x2f, 0x5a, /* 47 */ /* 0 */ /* 192 */	-36 (538) */ /* FC_IP */ /*
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */	, /* 16 */ /* 0 */ /* 0 ffset= 6 (496) */ /* FC_LONG */ 0x39, /* FC_POINTER */ 0x5b,  0x11, 0x0, /* FC_RF fdc ), /* Offset=	/* FC_ALIGNM8 */ /* FC_END */ 0 */ = -36 (462) */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 586 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0,	0x2f, 0x5a, /* 47 */ /* 0 */ /* 192 */ 0x0,	-36 (538) */ /* FC_IP */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */	, /* 16 */ /* 0 */ /* Offset= 6 (496) */ /* FC_LONG */ 0x39, /* FC_POINTER */ 0x5b, 0x11, 0x0, /* FC_RF	/* FC_ALIGNM8 */ /* FC_END */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 584 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0,	0x2f, 0x5a, /* 47 */ /* 0 */ /* 192 */ 0x0, /* 0 */	-36 (538) */ /* FC_IP */ /* /* 0 */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,     0x11, 0x0, /* FC_RF fdc ), /* Offset=     0x21,	/* FC_ALIGNM8 */ /* FC_END */  > */ = -36 (462) */ /*	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 584 */ /* 586 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0,	0x2f, 0x5a, /* 47 */ /* 0 */ /* 192 */ 0x0, /* 0 */	-36 (538) */ /* FC_IP */ /*
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xffffff) /* 500 */ FC_BOGUS_ARRAY */	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,     0x11, 0x0, /* FC_RF fdc ), /* Offset=     0x21,     0x3,	/* FC_ALIGNM8 */ /* FC_END */ 0 */ = -36 (462) */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 586 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0,	0x2f, 0x5a, /* 47 */ /* 0 */ /* 0 */ /* 192 */ 0x0, /* 0 */ 0x0, /* 0 */	-36 (538) */ /* FC_IP */ /* 0 */ /* 0 */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ),	, /* 16 */ /* 0 */ /* 0 */ /* Offset= 6 (496) */ /* FC_LONG */ 0x39, /* FC_POINTER */ 0x5b,  0x11, 0x0, /* FC_RFfdc ), /* Offset= 0x21, 0x3, /* 0 */	/* FC_ALIGNM8 */ /* FC_END */ 0 */ = -36 (462) */ /* /* 3 */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 584 */ /* 586 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0,	0x2f, 0x5a, /* 47 */ /* 0 */ /* 192 */ 0x0, /* 0 */	-36 (538) */ /* FC_IP */ /* /* 0 */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xffffff) /* 500 */ FC_BOGUS_ARRAY */	, /* 16 */ /* 0 */ /* 0 */ /* Offset= 6 (496) */ /* FC_LONG */ 0x39, /* FC_POINTER */ 0x5b,  0x11, 0x0, /* FC_RFfdc ), /* Offset= 0x21, 0x3, /* 0 */	/* FC_ALIGNM8 */ /* FC_END */  > */ = -36 (462) */ /*	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 584 */ /* 586 */ /* 588 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0,	0x2f, 0x5a, /* 47 */ /* 0 */ /* 192 */ 0x0, /* 0 */ 0x0, /* 0 */	-36 (538) */ /* FC_IP */ /* 0 */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ),	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RFfdc ), /* Offset=     0x21,      0x3,     /* 0 */     /* Corr desc: field p	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /* 3 */  cointer, FC_ULONG */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 584 */ /* 586 */ /* 588 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0,	0x2f, 0x5a, /* 47 */ /* 0 */ /* 192 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 0 */	-36 (538) */ /* FC_IP */ /* 0 */ /* 0 */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x0 ), /* 508 */ NdrFcShort( 0x1 ),	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RFfdc ),     /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 584 */ /* 588 */ /* 590 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0,	0x2f, 0x5a, /* 47 */ /* 0 */ /* 192 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 0 */	'* FC_IP */ /* FC_IP */ /* 0 */ /* 0 */ /* 0 */ /* 70 */ /* FC_CARRAY */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x0 ),	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RFfdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,  ffff ), /* -1 */	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 584 */ /* 588 */ /* 590 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0,	dc), /* Offset=  0x2f, 0x5a,  /* 47 */	-36 (538) */ /* FC_IP */ /* 0 */ /* 0 */ /* 0 */ /* 70 */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x0 ), /* 508 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x0 ), /* 511 */ NdrFcShort( 0x0 ),	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,     /* Corr flags: */	/* FC_ALIGNM8 */  /* FC_END */  = -36 (462) */  /* 3 */  cointer, FC_ULONG */  /* */	/* 574 */ /* 576 */  FC_CON /* 578 */ /* 582 */ /* 586 */ /* 588 */ /* 590 */ /* 594 */ /* 596 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0, 0x0, 0x0, NdrFcShort( 0x1 ),	dc), /* Offset=  0x2f, 0x5a,  /* 47 */	/* G - 36 (538) */ /* FC_IP */ /* 0 */ /* 0 */ /* 0 */ /* 70 */ /* 70 */ /* FC_CARRAY */ /* 0 */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x0 ), /* 508 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcLong( 0xfffff)	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,     /* Corr flags: */     /* FC_EMBEDDED	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */  */  COMPLEX */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 584 */ /* 588 */ /* 590 */ /* 592 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0, 0x0, 0x0, NdrFcShort( 0x1 ),	dc), /* Offset=  0x2f, 0x5a,  /* 47 */	/* G-36 (538) */ /* FC_IP */ /* 0 */ /* 0 */ /* 0 */ /* 70 */ /* 70 */ /* FC_CARRAY */ /* 0 */ pinter, FC_ULONG */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xffffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x0 ), /* 508 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x0 ), /* 510 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 516 */ 0x4c,	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,      fff ), /* -1 */     /* FC_EMBEDDED     0x0,      /* Ox0,	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */  */ COMPLEX */  /* 0 */	/* 574 */ /* 576 */ FC_CON /* 578 */ /* 582 */ /* 584 */ /* 586 */ /* 590 */ /* 592 */ /* 594 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0, 0x0, 0x0, NdrFcShort( 0x1 ), 0x19,	0x2f, 0x5a, /* 47 */ /* 0 */ /* 0 */ /* 0 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 1 */ 0x0, /* 2 */ 0x0, /* 3 */ 0x0, /* 47 */ /* 192 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 1 */ 0x0, /* 1 */ 0x0, /* 2 */ 0x0, /* 2 */ 0x0, /* 2 */ 0x0, /* 3 */ 0x0, /* 3 */ 0x0, /* 4 */ 0x0, /* 5 */ 0x0, /* 5 */ 0x0, /* 5 */ 0x0, /* 2 */ 0x0, 0x0	/* G - 36 (538) */ /* FC_IP */ /* 0 */ /* 0 */ /* 0 */ /* 70 */ /* 70 */ /* FC_CARRAY */ /* 0 */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xffffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 508 */ NdrFcShort( 0x0 ), /* 510 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 516 */ NdrFcShort( 0x0 ), /* 516 */ NdrFcShort( 0x0 ), /* 518 */ NdrFcShort( 0xfffff)	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,  fff ), /* -1 */     /* FC_EMBEDDED     0x0,  f44 ), /* Offset=	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */  */  COMPLEX */	/* 574 */ /* 576 */  FC_CON /* 578 */ /* 582 */ /* 584 */ /* 586 */ /* 590 */ /* 594 */ /* 596 */ /* 598 */ /* 600 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0, 0x0, 0x0, NdrFcShort( 0x1 ), 0x19, NdrFcShort( 0x4 ),	0x2f, 0x2f, 0x5a, /* 47 */ /* 0 */ /* 0 */ /* 192 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 1 */ 0x46, 0x1b, 0x0, /* 1 */ /* Corr desc: field poons, /* 4 */	/* FC_IP */ /* O */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 70 */ /* FC_CARRAY */ /* 0 */ pinter, FC_ULONG */ /* */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xffffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x0 ), /* 508 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x0 ), /* 510 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 516 */ 0x4c,	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,      ffff ), /* -1 */     /* FC_EMBEDDED     0x0,     f44 ), /* Offset=  /* FC_PAD */	/* FC_ALIGNM8 */ /* FC_END */  D */ = -36 (462) */ /* /* 3 */  cointer, FC_ULONG */ /* */  */ COMPLEX */ _ * 0 */ = -188 (330) */	/* 574 */ /* 576 */  FC_CON /* 578 */ /* 582 */ /* 584 */ /* 588 */ /* 590 */ /* 592 */ /* 594 */ /* 598 */ /* 600 */ /* 602 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0, 0x0, 0x0, NdrFcShort( 0x1 ), 0x19, NdrFcShort( 0x4 ), NdrFcShort( 0x1 ),	0x2f, 0x2f, 0x5a, /* 47 */ /* 0 */ /* 0 */ /* 0 */ 0x0, /* 1 */ /* Corr desc: field pc 0x0, /* 4 */ /* Corr flags: early, '	/* FC_IP */ /* O */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 70 */ /* FC_CARRAY */ /* 0 */ pinter, FC_ULONG */ /* */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x0 ), /* 510 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 515 */ 0x4c, /* 518 */ NdrFcShort( 0xfffff) /* 520 */ 0x5c,	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,  fff ), /* -1 */     /* FC_EMBEDDED     0x0,  f44 ), /* Offset=	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */  */ COMPLEX */  /* 0 */	/* 574 */ /* 576 */  FC_CON /* 578 */ /* 582 */ /* 584 */ /* 586 */ /* 590 */ /* 594 */ /* 596 */ /* 598 */ /* 600 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0, 0x0, 0x0, NdrFcShort( 0x1 ), 0x19, NdrFcShort( 0x4 ), NdrFcShort( 0x1 ),	0x2f, 0x2f, 0x5a, /* 47 */ /* 0 */ /* 0 */ /* 192 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 1 */ 0x46, 0x1b, 0x0, /* 2 Corr desc: field po 0x0, /* 4 */ /* Corr flags: early, '*	'* FC_IP */ /* FC_IP */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 70 */ /* FC_CARRAY */ /* 0 */ pinter, FC_ULONG */ /* */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xffffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 508 */ NdrFcShort( 0x0 ), /* 510 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 516 */ NdrFcShort( 0x0 ), /* 516 */ NdrFcShort( 0x0 ), /* 518 */ NdrFcShort( 0xfffff)	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,      ffff ), /* -1 */     /* FC_EMBEDDED     0x0,     f44 ), /* Offset=  /* FC_PAD */	/* FC_ALIGNM8 */ /* FC_END */  D */ = -36 (462) */ /* /* 3 */  cointer, FC_ULONG */ /* */  */ COMPLEX */ _ * 0 */ = -188 (330) */	/* 574 */ /* 576 */  FC_CON /* 578 */ /* 582 */ /* 584 */ /* 588 */ /* 590 */ /* 592 */ /* 594 */ /* 598 */ /* 600 */ /* 602 */ /* 604 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0, 0x0, 0x0, NdrFcShort( 0x1 ), 0x19, NdrFcShort( 0x4 ), NdrFcShort( 0x1 ),	0x2f, 0x2f, 0x5a, /* 47 */ /* 0 */ /* 0 */ /* 0 */ 0x0, /* 1 */ /* Corr desc: field pc 0x0, /* 4 */ /* Corr flags: early, '	/* FC_IP */ /* O */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 70 */ /* FC_CARRAY */ /* 0 */ pinter, FC_ULONG */ /* */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x0 ), /* 510 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 515 */ 0x4c, /* 518 */ NdrFcShort( 0xfffff) /* 520 */ 0x5c,	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,     /* Corr flags: */     /* FC_EMBEDDED     0x0,     /* FC_FAD */     0x5b,	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */  */ COMPLEX */	/* 574 */ /* 576 */  FC_CON /* 578 */ /* 582 */ /* 584 */ /* 588 */ /* 590 */ /* 592 */ /* 594 */ /* 598 */ /* 600 */ /* 602 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0, 0x0, 0x0, NdrFcShort( 0x1 ), 0x19, NdrFcShort( 0x4 ), NdrFcShort( 0x1 ),	0x2f, 0x2f, 0x5a, /* 47 */ /* 0 */ /* 0 */ /* 192 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 1 */ 0x46, 0x1b, 0x0, /* 2 Corr desc: field po 0x0, /* 4 */ /* Corr flags: early, '*	'* FC_IP */ /* FC_IP */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 0 */ /* 70 */ /* FC_CARRAY */ /* 0 */ pinter, FC_ULONG */ /* */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 516 */ Ox4c, /* 518 */ NdrFcShort( 0x0 ), /* 522 */	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,     /* Corr flags: */     /* FC_EMBEDDED     0x0,     /* FC_FAD */     0x5b,	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */  */ COMPLEX */	/* 574 */ /* 576 */  FC_CON /* 578 */ /* 582 */ /* 584 */ /* 580 */ /* 590 */ /* 594 */ /* 596 */ /* 598 */ /* 600 */ /* 604 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0xc0, 0x0, 0x0, 0x0, NdrFcShort( 0x1 ), 0x19, NdrFcShort( 0x4 ), NdrFcShort( 0x1 ),	0x2f, 0x2f, 0x5a, /* 47 */ /* 0 */ /* 0 */ /* 0 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x0, /* 0 */ 0x46, 0x1b, 0x0, /* 1 */ /* Corr desc: field po 0x0, /* 4 */ /* Corr flags: early, 2 /* FC_BYTE */ 0x5b,	'* FC_IP */  /* FC_IP */  /* 0 */  /* 0 */  /* 0 */  /* 70 */  /* FC_CARRAY */  /* 0 */  cointer, FC_ULONG */  /* */  /* FC_END */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */  FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x1 ), /* 514 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 515 */ NdrFcShort( 0x0 ), /* 516 */ Ox4c, /* 518 */ NdrFcShort( 0xfffff) /* 520 */ 0x5c, /* 522 */ FC_BOGUS_STRUCT */ /* 524 */ NdrFcShort( 0x10 )	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,     ffff), /* -1 */     /* FC_EMBEDDED     0x0,     f44 ), /* Offset=     /* FC_PAD */     0x3,     , /* 16 */	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */  */ COMPLEX */	/* 574 */ /* 576 */  FC_CON /* 578 */ /* 582 */ /* 584 */ /* 580 */ /* 590 */ /* 594 */ /* 596 */ /* 598 */ /* 600 */ /* 602 */ /* 604 */ FC_BOG	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0x0, 0x0, 0x0,  NdrFcShort( 0x1 ), 0x19,  NdrFcShort( 0x4 ), NdrFcShort( 0x1 ), 0x1,	dc), /* Offset=  0x2f, 0x5a,  /* 47 */	'* FC_IP */  /* FC_IP */  /* 0 */  /* 0 */  /* 0 */  /* 70 */  /* FC_CARRAY */  /* 0 */  cointer, FC_ULONG */  /* */  /* FC_END */
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xffffff) /* 500 */ FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 518 */ NdrFcShort( 0xfffff) /* 520 */ 0x5c, /* 522 */ FC_BOGUS_STRUCT */ /* 524 */ NdrFcShort( 0x10 ), /* 526 */ NdrFcShort( 0x0 ),	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,     0x11, 0x0, /* FC_RF fdc ), /* Offset=     0x21,     0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,     /* Corr flags: */     /* FC_EMBEDDED     0x0,     f44 ), /* Offset=     /* FC_PAD */     0x5b,     0x1a,     0x3,     /* 16 */     /* 0 */	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */  */ COMPLEX */	/* 574 */ /* 576 */  FC_CON /* 578 */ /* 582 */ /* 584 */ /* 586 */ /* 590 */ /* 592 */ /* 594 */ /* 594 */ /* 600 */ /* 600 */ /* 606 */ FC_BOG /* 608 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0x0, 0x0, 0x0, NdrFcShort( 0x1 ), 0x19, NdrFcShort( 0x4 ), NdrFcShort( 0x1 ), 0x1,  US_STRUCT */ NdrFcShort( 0x18 ),	dc), /* Offset=  0x2f, 0x5a,  /* 47 */	'* FC_IP */  /* FC_IP */  /* 0 */  /* 0 */  /* 70 */  /* FC_CARRAY */  /* 0 */  inter, FC_ULONG */  /* FC_END */  /* FC_END */  /*
/* 488 */ NdrFcShort( 0x0 ), /* 490 */ NdrFcShort( 0x6 ), /* 492 */ 0x8, /* 494 */ 0x36, /* 496 */ /* 498 */ NdrFcShort( 0xfffff) /* 500 */  FC_BOGUS_ARRAY */ /* 502 */ NdrFcShort( 0x0 ), /* 504 */ 0x19, /* 506 */ NdrFcShort( 0x1 ), /* 510 */ NdrFcShort( 0x1 ), /* 514 */ NdrFcShort( 0x0 ), /* 514 */ NdrFcShort( 0x0 ), /* 515 */ NdrFcShort( 0x0 ), /* 516 */ Ox4c, /* 518 */ NdrFcShort( 0xfffff) /* 520 */ 0x5c, /* 522 */ FC_BOGUS_STRUCT */ /* 524 */ NdrFcShort( 0x10 )	, /* 16 */     /* 0 */     /* 0 */     /* Offset= 6 (496) */     /* FC_LONG */     0x39,     /* FC_POINTER */     0x5b,      0x11, 0x0, /* FC_RF fdc ), /* Offset=      0x21,      0x3,     /* 0 */     /* Corr desc: field p     0x0,     /* 0 */     /* Corr flags: early,     ffff), /* -1 */     /* FC_EMBEDDED     0x0,     f44 ), /* Offset=     /* FC_PAD */     0x3,     , /* 16 */	/* FC_ALIGNM8 */  /* FC_END */  0 */ = -36 (462) */  /*  /* 3 */  cointer, FC_ULONG */  /* */  */ COMPLEX */	/* 574 */ /* 576 */  FC_CON /* 578 */ /* 582 */ /* 584 */ /* 586 */ /* 590 */ /* 592 */ /* 594 */ /* 594 */ /* 600 */ /* 602 */ /* 604 */ FC_BOG /* 608 */ /* 610 */	STANT_IID */ NdrFcLong( 0x2f ), NdrFcShort( 0x0 ), NdrFcShort( 0x0 ), 0x0, 0x0, 0x0,  NdrFcShort( 0x1 ), 0x19,  NdrFcShort( 0x4 ), NdrFcShort( 0x1 ), 0x1,	dc), /* Offset=  0x2f, 0x5a,  /* 47 */	'* FC_IP */  /* FC_IP */  /* 0 */  /* 0 */  /* 0 */  /* 70 */  /* FC_CARRAY */  /* 0 */  /* FC_ULONG */  /* */  /* FC_END */  /* 3 */

```
/* FC LONG */
                                                                            /* 692 */ 0x8,
                                                                                                           /* FC LONG */
/* 614 */ 0x8,
                               0x8,
                                                    /* FC LONG */
                                                                                                           0x39.
                                                                                                                                /* FC ALIGNM8 */
                                                                                                           /* FC_POINTER */
/* 616 */ 0x4c,
                               /* FC EMBEDDED COMPLEX */
                                                                            /* 694 */ 0x36.
                               0x0,
                                                    /* 0 */
                                                                                                           0x4c,
/* 618 */ NdrFcShort( 0xffffffd6 ),
                                         /* Offset= -42 (576) */
                                                                            FC EMBEDDED COMPLEX */
                                                                                                           /* 0 */
/* 620 */ 0x39,
                               /* FC ALIGNM8 */
                                                                            /* 696 */ 0x0,
                                                                                                           NdrFcShort( 0xffffffe7 ),
                               0x36,
                                                    /* FC POINTER */
                                                                                                                                          /* Offset=
/* 622 */ 0x5c,
                               /* FC PAD */
                                                                            -25 (672) */
                               0x5b,
                                                    /* FC END */
                                                                                                           0x5b,
                                                                                                                                /* FC END */
/* 624 */
                                                                            /* 700 */
                               0x12, 0x0, /* FC UP */
                                                                                                           0x11, 0x0, /* FC RP */
/* 626 */ NdrFcShort( 0xffffffe0 ),
                                         /* Offset= -32 (594) */
                                                                            /* 702 */ NdrFcShort( 0xffffff10 ),
                                                                                                                     /* Offset= -240 (462) */
/* 628 */
                                                                            /* 704 */
                                                                                                                                /* FC CARRAY */
                                                                                                           0x1b
                               0x21
FC_BOGUS_ARRAY */
                                                                                                                                /* 0 */
                                                                                                           0x0
                                                                                                           /* 1 */
                               0x3,
                                                   /* 3 */
                                                                            /* 706 */ NdrFcShort( 0x1 ),
/* 630 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                            /* 708 */ 0x19,
                                                                                                           /* Corr desc: field pointer, FC ULONG */
/* 632 */ 0x19,
                               /* Corr desc: field pointer, FC_ULONG */
                                                                                                           0x0,
                                                                            /* 710 */ NdrFcShort( 0x0 ).
                                                                                                           /* 0 */
                               0x0
/* 634 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                            /* 712 */ NdrFcShort( 0x1 ),
                                                                                                           /* Corr flags: early, */
                                                                            /* 714 */ 0x1,
/* 636 */ NdrFcShort( 0x1 ),
                               /* Corr flags: early, */
                                                                                                           /* FC_BYTE */
/* 638 */
          NdrFcLong( 0xffffffff ),
                                                                                                                                /* FC END */
                                                                                                           0x5b,
/* 642 */ NdrFcShort( 0x0 ),
                                                                            /* 716 */
                              /* Corr flags: */
/* 644 */
                                                                                                           0x1a,
                               0x12, 0x0, /* FC_UP */
                                                                            FC BOGUS STRUCT */
/* 646 */ NdrFcShort( 0xffffffd8 ),
                                         /* Offset= -40 (606) */
                                                                                                                                /* 3 */
                                                                                                           0x3
                               /* FC PAD */
/* 648 */ 0x5c,
                                                                            /* 718 */ NdrFcShort( 0x10 ),
                                                                                                           /* 16 */
                                                                            /* 720 */ NdrFcShort( 0x0 ),
                                                   /* FC_END */
                                                                                                           /* 0 */
                               0x5b.
/* 650 */
                                                                            /* 722 */ NdrFcShort( 0x6 ),
                                                                                                           /* Offset= 6 (728) */
                                                                            /* 724 */ 0x8,
                                                                                                           /* FC_LONG */
                               0x1a
FC BOGUS STRUCT */
                                                                                                           0x39,
                                                                                                                                /* FC ALIGNM8 */
                                                                                                           /* FC_POINTER */
                               0x3,
                                                    /* 3 */
                                                                            /* 726 */ 0x36,
/* 652 */ NdrFcShort( 0x10 ),
                               /* 16 */
                                                                                                           0x5b
                                                                                                                                /* FC END */
                               /* 0 */
/* 654 */ NdrFcShort( 0x0 ),
                                                                            /* 728 */
/* 656 */ NdrFcShort( 0x6 ),
                               /* Offset= 6 (662) */
                                                                                                           0x12, 0x0, /* FC UP */
/* 658 */ 0x8,
                               /* FC LONG */
                                                                            /* 730 */ NdrFcShort( 0xffffffe6 ),
                                                                                                                     /* Offset= -26 (704) */
                                                                            /* 732 */
                               0x39
                                                    /* FC_ALIGNM8 */
/* 660 */ 0x36,
                               /* FC POINTER */
                                                                                                                                /* FC CARRAY */
                                                                                                           0x1b,
                                                    /* FC_END */
                                                                                                                                /* 1 */
                               0x5b,
                                                                                                           0x1.
/* 662 */
                                                                            /* 734 */ NdrFcShort( 0x2 ),
                                                                                                           /* 2 */
                               0x11, 0x0, /* FC RP */
                                                                            /* 736 */
                                                                                      0x19,
                                                                                                           /* Corr desc: field pointer, FC ULONG */
/* 664 */ NdrFcShort( 0xffffffdc ),
                                         /* Offset= -36 (628) */
                                                                                                           0x0
                                                                            /* 738 */ NdrFcShort( 0x0 ),
                                                                                                           /* 0 */
/* 666 */
                                                                                                           /* Corr flags: early, */
                                                    /* FC_SMFARRAY */
                                                                            /* 740 */ NdrFcShort( 0x1 ),
                               0x1d
                                                                            /* 742 */ 0x6,
                                                                                                           /* FC SHORT */
                               0x0
                                                    /* 0 */
                               /* 8 */
                                                                                                                                /* FC_END */
/* 668 */ NdrFcShort( 0x8 ),
                                                                                                           0x5b,
/* 670 */ 0x2,
                               /* FC CHAR */
                                                                            /* 744 */
                               0x5b,
                                                    /* FC END */
                                                                                                           0x1a,
/* 672 */
                                                                            FC_BOGUS_STRUCT */
                                                    /* FC STRUCT */
                                                                                                                                /* 3 */
                               0x15,
                                                                                                           0x3,
                                                                                                           /* 16 */
                                                                            /* 746 */ NdrFcShort( 0x10 ),
                               0x3.
                                                    /* 3 */
                               /* 16 */
/* 674 */ NdrFcShort( 0x10 ),
                                                                            /* 748 */ NdrFcShort( 0x0 ),
                                                                                                           /* 0 */
                               /* FC_LONG */
                                                                            /* 750 */ NdrFcShort( 0x6 ),
                                                                                                           /* Offset= 6 (756) */
/* 676 */ 0x8.
                                                    /* FC SHORT */
                                                                            /* 752 */ 0x8,
                                                                                                           /* FC LONG */
                               0x6
                               /* FC SHORT */
/* 678 */ 0x6,
                                                                                                           0x39,
                                                                                                                                /* FC ALIGNM8 */
                                                                            /* 754 */ 0x36,
                                                                                                           /* FC_POINTER */
                               0x4c,
FC EMBEDDED COMPLEX */
                                                                                                           0x5b,
                                                                                                                                /* FC END */
                                                                            /* 756 */
                               /* 0 */
/* 680 */ 0x0,
                               NdrFcShort( 0xfffffff1 ),
                                                                                                           0x12, 0x0, /* FC UP */
                                                              /* Offset=
                                                                            /* 758 */ NdrFcShort( 0xffffffe6 ),
                                                                                                                     /* Offset= -26 (732) */
-15 (666) */
                               0x5b,
                                                    /* FC END */
                                                                            /* 760 */
/* 684 */
                                                                                                           0x1b,
                                                                                                                                /* FC CARRAY */
                                                                                                                                /* 3 */
                               0x1a.
                                                                                                           0x3.
FC_BOGUS_STRUCT */
                                                                            /* 762 */ NdrFcShort( 0x4 ),
                                                                                                           /* 4 */
                                                    /* 3 */
                                                                                                           /* Corr desc: field pointer, FC_ULONG */
                               0x3.
                                                                            /* 764 */
                                                                                      0x19,
/* 686 */ NdrFcShort( 0x20 ),
                              /* 32 */
                                                                                                           0x0,
/* 688 */ NdrFcShort( 0x0 ),
                                                                                                           /* 0 */
                               /* 0 */
                                                                            /* 766 */ NdrFcShort( 0x0 ),
/* 690 */ NdrFcShort( 0xa ),
                              /* Offset= 10 (700) */
                                                                            /* 768 */ NdrFcShort( 0x1 ),
                                                                                                          /* Corr flags: early, */
```

/* 770 */ 0x8,	/* FC_LONG */		/* 848 */ 0x6,	/* FC_SHC	)RT */		
/* 772 */	0x5b,	/* FC_END */	/* 950 */ 0-29	0x6,		FC_SHORT */	
/* //Z */	0x1a,	/*	/* 850 */ 0x38,	/* FC_ALI0 0x8,		FC_LONG */	
FC_BOGUS_STRUCT */	0.2	(* 2 * /	/* 852 */ 0x8,	/* FC_LON	1G */		
/* 774 */ NdrFcShort( 0x10 )	0x3, , /* 16 */	/* 3 */	FC EMBEDDED COM	0x4c, PLEX */	/*	•	
/* 776 */ NdrFcShort( 0x0 ),	/* 0 */		/* 854 */ 0x4,	/* 4 */			
/* 778 */ NdrFcShort( 0x6 ), /* 780 */ 0x8,	/* Offset= 6 (784) */ /* FC_LONG */	/	-499 (356) */	NdrFcShor	t( 0xfffffe0d	), /* Offset=	
/ 180 / UX8,	0x39,	/* FC ALIGNM8 */	-499 (330) 17	0x5b,	/*	FC_END */	
/* 782 */ 0x36,	/* FC_POINTER */		/* 858 */			_	
/* 784 */	0x5b,	/* FC_END */	/* 860 */ NdrFcShort( 0		/* FC_UP */ /* Offset= -2		
0x12, 0x0, /* FC_UP */			/* 862 */				
/* 786 */ NdrFcShort( 0xfffff /* 788 */	ffe6), /* Offset=	= -26 (760) */	/* 864 */ 0x1,	0x12, 0x8, /* FC BYT		imple_pointer] */	
7 700 7	0x1b,	/* FC_CARRAY */	7 004 7 081,	0x5c,		FC_PAD */	
/* 700 */ NJ-E-Cl+( 00 )	0x7, /* 8 */	/ <b>*</b> 7 <b>*</b> /	/* 866 */	012 09	/* FC ID [-:	:1 */	
/* 790 */ NdrFcShort( 0x8 ), /* 792 */ 0x19,		ointer, FC ULONG */	/* 868 */ 0x6,	/* FC_SHC		imple_pointer] */	
	0x0,	/* */		0x5c,		FC_PAD */	
/* 794 */ NdrFcShort( 0x0 ), /* 796 */ NdrFcShort( 0x1 ),	/* 0 */ /* Corr flags: early,	*/	/* 870 */	0x12_0x8	/* FC_UP [si	imple pointer] */	
/* 798 */ 0xb,	/* FC_HYPER */		/* 872 */ 0x8,	/* FC_LON	NG */		
/* 800 */	0x5b,	/* FC_END */	/* 874 */	0x5c,	/*	FC_PAD */	
7 800 7	0x1a,	<b>/*</b>	7 874 7	0x12, 0x8,	/* FC_UP [si	imple_pointer] */	
FC_BOGUS_STRUCT */	02	/* 3 */	/* 876 */ 0xa,	/* FC_FLO		EC DAD */	
/* 802 */ NdrFcShort( 0x10 )	0x3, , /* 16 */	/* 3 */	/* 878 */	0x5c,	/*	FC_PAD */	
/* 804 */ NdrFcShort( 0x0 ),	/ <b>*</b> 0 <b>*</b> /					imple_pointer] */	
/* 806 */ NdrFcShort( 0x6 ), /* 808 */ 0x8,	/* Offset= 6 (812) */ /* FC_LONG */		/* 880 */ 0xc,	/* FC_DOU 0x5c,		FC_PAD */	
,	0x39,	/* FC_ALIGNM8 */	/* 882 */	ŕ		_	
/* 810 */ 0x36,	/* FC_POINTER */ 0x5b,	/* FC_END */	/* 884 */ NdrFcShort( 0		/* FC_UP */ /* Offset= -6		
/* 812 */	•	_	/* 886 */	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		, ,	
/* 814 */ NdrFcShort( 0xfffff	0x12, 0x0, /* FC_UI	? */ = -26 (788) */	[pointer_deref] */	0x12, 0x10	, /*	FC_UP	
/* 816 */	neo ), / Onset-		/* 888 */ NdrFcShort( 0	0xfffffda6 ),	/* Offset= -6	02 (286) */	
	0x15,	/* FC_STRUCT */ /* 3 */	/* 890 */	012 010	/\$	FC UD	
/* 818 */ NdrFcShort( 0x8 ),	0x3, /* 8 */	/. 3 ./	[pointer_deref] */	0x12, 0x10	, /.	FC_UP	
/* 820 */ 0x8,	/* FC_LONG */	# FG 1 0NG #/	/* 892 */ NdrFcShort( 0	exfffffdbc),	/* Offset= -5	80 (312) */	
/* 822 */ 0x5c,	0x8, /* FC PAD */	/* FC_LONG */	/* 894 */	0x12, 0x10	. /*	FC UP	
,	0x5b,	/* FC_END */	[pointer_deref] */	ŕ	,	_	
/* 824 */	0x1b,	/* FC CARRAY */	/* 896 */ NdrFcShort( 0 /* 898 */	extifffdca),	/* Offset= -5	66 (330) */	
	0x3,	/* 3 */		0x12, 0x10	, /*	FC_UP	
/* 826 */ NdrFcShort( 0x8 ), /* 828 */ 0x7,	/* 8 */ /* Corr desc: FC US	SHODT */	[pointer_deref] */ /* 900 */ NdrFcShort( 0	ov fffffddg )	/* Offset= -5	52 (3/8) */	
ŕ	0x0,	/* */	/* 900 */ Null Cshort( 0	oxiiiiudo ),		` ′	
/* 830 */ NdrFcShort( 0xffc8	(*), /* -56 */	<b>*</b> /		0x12, 0x10	, /*	FC_UP	
/* 832 */ NdrFcShort( 0x1 ), /* 834 */ 0x4c,	/* Corr flags: early, /* FC EMBEDDED		[pointer_deref] */ /* 904 */ NdrFcShort( 0	0x2), /* Offset= 2	2 (906) */		
ŕ	0x0, -	- /* 0 */	/* 906 */	**	, ,		
/* 836 */ NdrFcShort( 0xfffff /* 838 */ 0x5c,	ffec ), /* Offset= /* FC PAD */	= -20 (816) */	/* 908 */ NdrFcShort( 0	, ,	/* FC_UP */ 22 (930) */		
ŕ	0x5b,	/* FC_END */	/* 910 */	,, , , , , , , , , , , , , , , , , , , ,	, ,		
/* 840 */	0x1a,	/ <b>*</b>		0x15, 0x7,		FC_STRUCT */	
FC_BOGUS_STRUCT */	oniu,		/* 912 */ NdrFcShort( 0		,.	, ,	
/* 042 */ NJ_E-CL(0 20)	0x3,	/* 3 */	/* 914 */ 0x6,	/* FC_SHC		EC DVTE */	
/* 842 */ NdrFcShort( 0x38 ) /* 844 */ NdrFcShort( 0xffff		= -20 (824) */	/* 916 */ 0x1,	0x1, /* FC_BYT		FC_BYTE */	
/* 846 */ NdrFcShort( 0x0 ),				0x38,		FC_ALIGNM4 */	

```
/* 918 */ 0x8,
                               /* FC LONG */
                                                    /* FC ALIGNM8 */
                               0x39,
/* 920 */ 0xb,
                               /* FC HYPER */
                               0x5b,
                                                    /* FC_END */
                                                                             #define _tpcc_com_ps_CHECK_IID(n)
                                                                                                                      IID_GENERIC_CHECK_IID(
/* 922 */
                                                                             _tpcc_com_ps, pIID, n)
                               0x12, 0x0, /* FC UP */
/* 924 */
          NdrFcShort( 0xfffffff2 ),
                                         /* Offset= -14 (910) */
                                                                             int stdcall tpcc com ps IID Lookup( const IID * pIID, int * pIndex )
/* 926 */
                               0x12, 0x8, /* FC UP [simple pointer] */
/* 928 */ 0x2,
                               /* FC CHAR */
                                                                               if(!_tpcc_com_ps_CHECK_IID(0))
                               0x5c,
                                                    /* FC PAD */
/* 930 */
                                                                                 *pIndex = 0:
                               0x1a,
                                                                                 return 1;
FC_BOGUS_STRUCT */
                               0x7,
                               /* 32 */
/* 932 */
          NdrFcShort(0x20),
                                                                               return 0;
/* 934 */
          NdrFcShort( 0x0 ).
                               /* 0 */
/* 936 */ NdrFcShort( 0x0 ),
                               /* Offset= 0 (936) */
/* 938 */ 0x8.
                               /* FC_LONG */
                                                                             const ExtendedProxyFileInfo tpcc_com_ps_ProxyFileInfo =
                                                    /* FC LONG */
                               0x8
                               /* FC_SHORT */
/* 940 */ 0x6,
                                                                               (PCInterfaceProxyVtblList *) & _tpcc_com_ps_ProxyVtblList,
                                                                               (PCInterfaceStubVtblList *) & tpcc com ps StubVtblList,
                               0x6,
                                                    /* FC SHORT */
/* 942 */ 0x6,
                               /* FC_SHORT */
                                                                               (const PCInterfaceName * ) & _tpcc_com_ps_InterfaceNamesList,
                                                    /* FC SHORT */
                                                                               0, // no delegation
                               0x6.
/* 944 */ 0x4c,
                               /* FC EMBEDDED COMPLEX */
                                                                               & _tpcc_com_ps_IID_Lookup,
                                                    /* 0 */
                               0x0.
/* 946 */ NdrFcShort( 0xfffffc54 ),
                                          /* Offset= -940 (6) */
                               /* FC_PAD */
/* 948 */ 0x5c,
                                                                               0, /* table of [async_uuid] interfaces */
                               0x5b,
                                                    /* FC END */
                                                                               0, /* Filler1 */
                                                                               0, /* Filler2 */
/* 950 */ 0xb4,
                               /* FC_USER_MARSHAL */
                               0x83,
                                                    /* 131 */
                                                                               0 /* Filler3 */
/* 952 */
          NdrFcShort( 0x0 ),
                               /* 0 */
/* 954 */
          NdrFcShort( 0x18 ),
                               /* 24 */
                               /* 0 */
/* 956 */
          NdrFcShort( 0x0 ),
/* 958 */
          NdrFcShort( 0xfffffc44 ),
                                         /* Offset= -956 (2) */
                                                                             #endif /* defined(_M_IA64) || defined(_M_AXP64)*/
/* 960 */
                               0x11, 0x4, /* FC_RP [alloced_on_stack] */
/* 962 */
                               /* Offset= 6 (968) */
          NdrFcShort( 0x6 ),
                                                                             tpcc dblib.cpp
/* 964 */
                               0x13, 0x0, /* FC OP */
                                                                                       FILE:
                                                                                                            TPCC_DBLIB.CPP
/* 966 */ NdrFcShort( 0xffffffdc ),
                                         /* Offset= -36 (930) */
                                                                                                                       Microsoft TPC-C Kit Ver.
/* 968 */ 0xb4,
                               /* FC_USER_MARSHAL */
                                                                             4.20.000
                                                    /* 131 */
                               0x83,
                                                                                                                       Copyright Microsoft, 1999
/* 970 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                             *
                                                                                       All Rights Reserved
/* 972 */
          NdrFcShort( 0x18 ), /* 24 */
/* 974 */ NdrFcShort( 0x0 ),
                               /* 0 */
                                                                                                                       Version 4.10.000 audited by
/* 976 */ NdrFcShort( 0xfffffff4 ),
                                         /* Offset= -12 (964) */
                                                                             Richard Gimarc, Performance Metrics, 3/17/99
                               0x0
                                                                                       PURPOSE:
                                                                                                            Implements dblib calls for TPC-C txns.
                                                                                       Contact: Charles Levine (clevine@microsoft.com)
                                                                               Change history:
const CInterfaceProxyVtbl * _tpcc_com_ps_ProxyVtblList[] =
                                                                                                  4.20.000 - updated rev number to match kit
                                                                                                 4.10.001 - not deleting error class in catch handler on
  (CInterfaceProxyVtbl *) & ITPCCProxyVtbl,
                                                                             deadlock retry;
  0
                                                                                                                        not a functional bug, but a
};
                                                                             memory leak
                                                                                                                       - had to tweak some declarations
const CInterfaceStubVtbl * _tpcc_com_ps_StubVtblList[] =
                                                                             to compile with latest SDK; no functional change
  (CInterfaceStubVtbl *) & ITPCCStubVtbl,
  0
                                                                             #include <windows.h>
};
                                                                             #include <stdio.h>
                                                                             #include <assert.h>
PCInterfaceName const _tpcc_com_ps_InterfaceNamesList[] =
                                                                             #define DBNTWIN32
  "ITPCC",
                                                                             #include <sqlfront.h>
  0
                                                                            #include <sqldb.h>
```

```
#ifdef ICECAP
#include <icapexp.h>
#endif
// need to declare functions for export
#define DllDecl declspec( dllexport )
#include "..\..\common\src\error.h"
#include "..\..\common\src\trans.h"
#include "..\..\common\src\txn_base.h"
#include "tpcc_dblib.h"
         DEFCLPACKSIZE
                                                    4096
#define
// version string; must match return value from tpcc_version stored proc
const char sVersion[] = "4.10.000";
                               iMaxRetries = 10;
const
                                                               // how many
retries on deadlock
                     iConnectionCount = 0; // number of current dblib
static
          long
connections
const int iErrOleDbProvider = 7312;
const char sErrTimeoutExpired[] = "Timeout expired";
BOOL APIENTRY DllMain(HMODULE hModule, DWORD
ul_reason_for_call, LPVOID pReserved)
          switch( ul_reason_for_call )
                     case DLL_PROCESS_ATTACH:
                               DisableThreadLibraryCalls(hModule);
                               dbinit();
                                                    // initialize dblib
                               break;
                     case DLL PROCESS DETACH:
                               dbexit();
                                                    // close all dblib
structures/connections
                               break:
                     default:
                               /* nothing */;
          return TRUE;
int err_handler(DBPROCESS *dbproc, int severity, int dberr, int oserr,
LPCSTR dberrstr, LPCSTR oserrstr)
          CTPCC DBLIB
                                                     *pConn;
          assert(dbproc != NULL);
          pConn = (CTPCC DBLIB*)dbgetuserdata(dbproc);
          if (pConn != NULL)
                     pConn->SetDbLibError( severity, dberr, oserr, dberrstr,
oserrstr);
          return INT_CANCEL;
/* FUNCTION: int msg_handler(DBPROCESS *dbproc, DBINT msgno, int
msgstate, int severity, char *msgtext)
```

```
* PURPOSE:
                    This function handles DB-Library SQL Server error
messages
                    DBPROCESS
* ARGUMENTS:
                                                   *dbproc
DBPROCESS id pointer
                                         DBINT
msgno
                              message number
                                        int
msgstate
                    message state
                                        int
severity
                    message severity
                                        char
*msgtext
                    printable message description
* RETURNS:
                    continue if error is SQLETIME else INT_CANCEL
INT CONTINUE
action
INT_CANCEL
                              cancel operation
* COMMENTS:
                    This function also sets the dead lock dbproc variable if
necessary.
// typedef INT (SQLAPI *DBMSGHANDLE PROC)(PDBPROCESS, DBINT,
INT, INT, LPCSTR, LPCSTR, LPCSTR, DBUSMALLINT);
int msg handler(DBPROCESS *dbproc, DBINT msgno, int msgstate, int
severity.
                                        LPCSTR msgtext, LPCSTR
srvname, LPCSTR procname, DBUSMALLINT line)
          CTPCC DBLIB
                                                   *pConn;
          assert(dbproc != NULL);
          pConn = (CTPCC_DBLIB*)dbgetuserdata(dbproc);
          if (pConn != NULL)
                    pConn->SetSqlError( msgno, msgstate, severity, msgtext
);
          return 0;
/* FUNCTION: void UtilStrCpy(char * pDest, char * pSrc, int n)
* PURPOSE:
                    This function copies n characters from string pSrc to pDst
and places a
                              null character at the end of the destination
string.
* ARGUMENTS:
                    char
                                                   *pDest
                                                             destination
string pointer
                                        char
*pSrc
          source string pointer
                                        int
                    number of characters to copy
n
* RETURNS:
                              None
* COMMENTS:
                    Unlike strncpy this function ensures that the result string
is
                                        always null terminated.
*/
```

```
inline static void UtilStrCpy(char * pDest, const BYTE * pSrc, int n)
                                                                                      LOGINREC
                                                                                                          *login;
                                                                                      const BYTE
                                                                                                           *pData;
  strncpy(pDest, (char *)pSrc, n);
  pDest[n] = '\0';
                                                                                      // initialization
                                                                                      m dbproc = NULL;
                                                                                      m DbLibErr = (CDBLIBERR*)NULL;
          return;
                                                                                      m_SqlErr = (CSQLERR*)NULL;
/* FUNCTION: CTPCC DBLIB ERR::ErrorText
                                                                                      m MaxRetries = 10;
                                                                                                                     // how many retries on deadlock
*/
                                                                                      // increase max number of connections if getting close
                                                                                      if (dbgetmaxprocs() < (iConnectionCount+5))
char* CTPCC_DBLIB_ERR::ErrorText(void)
                                                                                                if ( dbsetmaxprocs(iConnectionCount+10) == FAIL )
          int i;
                                                                           ThrowError(CDBLIBERR::eDbSetMaxProcs);
          static SERRORMSG errorMsgs[] =
                    { ERR WRONG SP VERSION,
                                                                                      // allocate a login structure
"Wrong version of stored procs on database server"
                                                                                      login = dblogin();
                    { ERR INVALID CUST,
                                                                                      if (login == NULL)
"Invalid Customer id,name.'
                                                                                                ThrowError(CDBLIBERR::eLogin);
                                                                                      InterlockedIncrement(&iConnectionCount);
          },
                    { ERR_NO_SUCH_ORDER,
                                                              "No orders
found for customer."
                                                                                      // register error and message handler functions
                                                                                      if (dbprocerrhandle(login, err handler) == NULL)
                    { ERR_RETRIED_TRANS,
                                                              "Retries
                                                                                                ThrowError(CDBLIBERR::eDbProcHandler);
before transaction succeeded."
                                                             },
                                                                                      if (dbprocmsghandle(login, msg_handler) == NULL)
                                                                                                ThrowError(CDBLIBERR::eDbProcHandler);
          };
                                                                                      DBSETLUSER(login, szUser);
          static char szNotFound[] = "Unknown error number.";
                                                                                      DBSETLPWD(login, szPassword);
                                                                                      DBSETLHOST(login, szHost);
                                                                                      DBSETLPACKET(login, (unsigned short)DEFCLPACKSIZE);
          for(i=0; errorMsgs[i].szMsg[0]; i++)
                                                                                      DBSETLVERSION(login, DBVER60);
                    if ( m_errno == errorMsgs[i].iError )
                                                                           ver 6.0 client behavior
                              break;
                                                                                      // set time to wait for login
                                                                                      if (dbsetlogintime(60) == FAIL)
          if (!errorMsgs[i].szMsg[0])
                    return szNotFound;
                                                                                                ThrowError(CDBLIBERR::eDbSet);
          else
                                                                                      // set time to wait for statement execution
                    return errorMsgs[i].szMsg;
                                                                                      if(dbsettime(180) == FAIL)
                                                                                                ThrowError(CDBLIBERR::eDbSet);
// wrapper routine for class constructor
__declspec(dllexport) CTPCC_DBLIB* CTPCC_DBLIB_new(
                                                                                      m_dbproc = dbopen(login, szServer);
          LPCSTR szServer,
                                         // name of SQL server
          LPCSTR szUser,
                                                                                      // deallocate login structure before checking for success
                                                   // user name for login
          LPCSTR szPassword,
                                                                                      dbfreelogin( login );
                                         // password for login
          LPCSTR szHost,
                                                   // workstation name;
shows up in sp_who; max 30 chars, only first 10 kept by SQL Server
                                                                                      if (m dbproc == NULL)
          LPCSTR szDatabase)
                                                                                                ThrowError(CDBLIBERR::eDbOpen);
                                         // name of database to use
          return new CTPCC DBLIB( szServer, szUser, szPassword, szHost,
                                                                                      // save address of class instance so that the message and error
szDatabase);
                                                                           handler
                                                                                      // can get to data.
                                                                                      dbsetuserdata(m_dbproc, (LPVOID)this);
CTPCC DBLIB::CTPCC DBLIB (
                                                                                      // Use the the right database
          LPCSTR szServer,
                                         // name of SQL server
                                                                                      if (dbuse(m_dbproc, szDatabase) == FAIL)
          LPCSTR szUser,
                                                   // user name for login
                                                                                                ThrowError(CDBLIBERR::eDbUse);
          LPCSTR szPassword,
                                         // password for login
          LPCSTR szHost,
                                                   // workstation name;
                                                                                      dbcmd(m dbproc, "set nocount on ");
shows up in sp_who; max 30 chars, only first 10 kept by SQL Server
                                                                           do not return row counts
          LPCSTR szDatabase)
                                         // name of database to use
```

//

// use dblib

```
dbcmd(m_dbproc, "set XACT_ABORT ON");
rollback transaction on abort
          if (dbsqlexec(m_dbproc) == FAIL)
                                                                            void CTPCC DBLIB::SetSqlError( int /*DBINT*/ msgno, int msgstate, int
                    ThrowError(CDBLIBERR::eDbSqlExec);
                                                                            severity, LPCSTR msgtext)
          DiscardNextResults(2);
                                                                                      if (m SqlErr == NULL)
                                                                                                m SqlErr = new CSQLERR();
          // verify that version of stored procs on server is correct
          dbrpcinit(m dbproc, "tpcc version", 0);
                                                                                      m SqlErr->m msgno = msgno;
                                                                                      m_SqlErr->m_msgstate = msgstate;
          if (dbrpcexec(m dbproc) == FAIL)
                                                                                      m_SqlErr->m_severity = severity;
                    ThrowError(CDBLIBERR::eDbRpcExec);
                                                                                      delete [] m_SqlErr->m_msgtext;
          if (dbresults(m dbproc) != SUCCEED)
                                                                                      if (msgtext != NULL)
                    ThrowError(CDBLIBERR::eDbResults);
                                                                                                m SqlErr->m_msgtext = new char[ strlen(msgtext)+1 ];
          if (dbnextrow(m_dbproc) != REG_ROW)
                                                                                                strcpy( m_SqlErr->m_msgtext, msgtext );
                    ThrowError(CDBLIBERR::eDbNextRow);
          char szSrvVersion[16];
                                                                            void CTPCC DBLIB::ThrowError( CDBLIBERR::ACTION eAction )
          pData=dbdata(m dbproc, 1);
          if (pData)
                    UtilStrCpy(szSrvVersion, pData, dbdatlen(m dbproc,
                                                                                      // discard anything still in return buffer
1));
                                                                                      DiscardNextRows(-1);
                                                                                      DiscardNextResults(-1);
          else
                    szSrvVersion[0]=0;
          if (strcmp(szSrvVersion,sVersion))
                                                                                      // check for SQL Server error first; if yes, throw it and ignore any
                                                                            DBLib error.
                    throw new CTPCC DBLIB ERR(
CTPCC_DBLIB_ERR::ERR_WRONG_SP_VERSION );
                                                                                      if (m SqlErr!= NULL)
                                                                                                 CSQLERR
                                                                                                                      *pSqlErr;
          DiscardNextRows(0):
                                                                                                pSqlErr = m SqlErr;
          DiscardNextResults(0);
                                                                                                m SqlErr = NULL;
                                                                                                                     // clear our pointer to instance;
                                                                            catch handler will delete
}
                                                                                                 throw pSqlErr;
CTPCC DBLIB::~CTPCC DBLIB( void )
                                                                                      CDBLIBERR
                                                                                                           *pDbLibErr;
          // close db connection and deallocate resources
                                                                                      if (m DbLibErr == NULL)
          dbclose(m dbproc);
                                                                                                 // this case isn't expected to happen, since it means that an
          InterlockedDecrement( &iConnectionCount );
                                                                            error was returned
          if (m DbLibErr != NULL)
                                                                                                 // but the error handlers were not called.
                    delete m_DbLibErr;
                                                                                                pDbLibErr = new CDBLIBERR(eAction);
          if (m SqlErr != NULL)
                                                                                      else
                    delete m_SqlErr;
                                                                                                pDbLibErr = m DbLibErr;
}
                                                                                                pDbLibErr->m eAction = eAction;
void CTPCC_DBLIB::SetDbLibError(int severity, int dberr, int oserr, LPCSTR
                                                                                                m DbLibErr = NULL;
                                                                                                                                          // clear our
dberrstr, LPCSTR oserrstr)
                                                                            pointer to instance; catch handler will delete
          delete m DbLibErr;
          m_DbLibErr = new CDBLIBERR(CDBLIBERR::eUnknown,
                                                                                      throw pDbLibErr;
severity, dberr, oserr);
          if (dberrstr!= NULL)
                                                                            // Read and discard rows until no more. Throw an exception if number of rows
                                                                            // match number of rows expected. The row count will be ignored if the
                    m_DbLibErr->m_dberrstr = new char[ strlen(dberrstr)+1
];
                                                                            expected count value
                    strcpy( m_DbLibErr->m_dberrstr, dberrstr );
                                                                            // passed in is negative. A typical use of this routine is to verify that there are
                                                                            no more
                                                                            // rows to be read.
          if (oserrstr!= NULL)
                                                                            void CTPCC DBLIB::DiscardNextRows(int iExpectedCount)
                    m DbLibErr->m oserrstr = new char[ strlen(oserrstr)+1
                                                                                                           iRowsRead = 0;
                                                                                      int
];
                                                                                      RETCODE
                                                                                                           rc;
                    strcpy( m_DbLibErr->m_oserrstr, oserrstr );
          }
                                                                                      while (TRUE)
```

```
{
                     rc = dbnextrow(m_dbproc);
                     if (rc == NO MORE ROWS)
                               break;
                     if (rc == FAIL)
                               if (iExpectedCount \ge 0)
ThrowError(CDBLIBERR::eDbNextRow);
                               else
                                          break;
                     iRowsRead++;
          if ((iExpectedCount \ge 0) \&\&
                     (iExpectedCount != iRowsRead))
                     ThrowError(CDBLIBERR::eWrongRowCount);
}
// Read and discard results until no more. Throw an exception if number of
result sets read doesn't
// match number expected. The result set count will be ignored if the expected
count value
// passed in is negative. A typical use of this routine is to verify that there are
no more
// result sets to be read.
void CTPCC_DBLIB::DiscardNextResults(int iExpectedCount)
          int
                               iResultsRead = 0;
          RETCODE
                               rc;
          while (TRUE)
                     rc = dbresults(m_dbproc);
                     if (rc == NO MORE RESULTS)
                               break;
                     if (rc == FAIL)
                               if (iExpectedCount >= 0)
ThrowError(CDBLIBERR::eDbResults);
                                          break;
                     DiscardNextRows(-1);
                     iResultsRead++;
          }
          if ((iExpectedCount \geq = 0) &&
                     (iExpectedCount != iResultsRead))
                     ThrowError(CDBLIBERR::eWrongRowCount);
}
void CTPCC_DBLIB::StockLevel()
          int
                                          iTryCount = 0;
          const BYTE
                               *pData;
          ResetError();
          while (TRUE)
                     try
                               dbrpcinit(m_dbproc, "tpcc_stocklevel", 0);
```

```
dbrpcparam(m_dbproc, NULL, 0, SQLINT2,
-1, -1, (BYTE *) &m_txn.StockLevel.w_id);
                                                  // @w_id smallint
                              dbrpcparam(m dbproc, NULL, 0, SQLINT1,
-1, -1, (BYTE *) &m_txn.StockLevel.d_id);
                                                  // @d_id tinyint
                              dbrpcparam(m_dbproc, NULL, 0, SQLINT2,
-1, -1, (BYTE *) &m txn.StockLevel.threshold); // @threshhold smallint
                              if (dbrpcexec(m_dbproc) == FAIL)
ThrowError(CDBLIBERR::eDbRpcExec);
                              if (dbresults(m_dbproc) != SUCCEED)
ThrowError(CDBLIBERR::eDbResults);
                              if (dbnextrow(m_dbproc) != REG_ROW)
ThrowError(CDBLIBERR::eDbNextRow);
                              if (pData=dbdata(m dbproc, 1))
                                       m_txn.StockLevel.low_stock =
*((long *) pData);
                              DiscardNextRows(0);
                              DiscardNextResults(0);
                              m txn.StockLevel.exec status code = eOK;
                              return:
                   catch (CSQLERR *e)
                              if ((e->m_msgno == 1205 ||
                                        (e->m_msgno ==
iErrOleDbProvider &&
                                        strstr(e->m_msgtext,
sErrTimeoutExpired) != NULL)) &&
                                        (++iTryCount <= iMaxRetries))
                                       // hit deadlock; backoff for
increasingly longer period
                                        delete e;
                                       Sleep(10 * iTryCount);
                              else
                                        throw;
                    // while (TRUE)
         //if (iTryCount)
                   throw new
CTPCC_DBLIB_ERR(CTPCC_DBLIB_ERR::ERR_RETRIED_TRANS,
iTryCount);
void CTPCC_DBLIB::NewOrder()
          int
                                       i;
          DBINT
                              commit flag;
         DBDATETIME
                              datetime;
          DBDATEREC
                              daterec;
                                       iTryCount = 0;
          int
          const BYTE
                              *pData;
          ResetError();
          while (TRUE)
```

```
{
                                                                          m txn.NewOrder.OL[i].ol stock = (*(DBSMALLINT *) pData);
                                                                                                                  if(pData=dbdata(m dbproc, 3))
                              dbrpcinit(m_dbproc, "tpcc_neworder", 0);
                                                                          UtilStrCpy(m_txn.NewOrder.OL[i].ol_brand_generic, pData,
                              dbrpcparam(m dbproc, NULL, 0, SQLINT2,
                                                                          dbdatlen(m dbproc, 3));
-1, -1, (BYTE *) &m txn.NewOrder.w id);
                                                                                                                  if(pData=dbdata(m dbproc, 4))
                              dbrpcparam(m_dbproc, NULL, 0, SQLINT1,
                                                                                                                            dbconvert(m dbproc,
-1, -1, (BYTE *) &m txn.NewOrder.d id);
                                                                          SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m dbproc,4).
                                                                                                                            SQLFLT8, (BYTE
                              dbrpcparam(m dbproc, NULL, 0, SQLINT4,
-1, -1, (BYTE *) &m_txn.NewOrder.c_id);
                                                                          *)&m_txn.NewOrder.OL[i].ol_i_price, 8);
                              dbrpcparam(m_dbproc, NULL, 0, SQLINT1,
                                                                                                                  if(pData=dbdata(m dbproc, 5))
-1, -1, (BYTE *) &m txn.NewOrder.o ol cnt);
                                                                                                                            dbconvert(m_dbproc,
                                                                          SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,5),
                              // check whether any order lines are for a
remote warehouse
                                                                                                                            SQLFLT8, (BYTE
                              m txn.NewOrder.o all local = 1;
                                                                          *)&m txn.NewOrder.OL[i].ol amount, 8);
                              for (i = 0; i < m_txn.NewOrder.o_ol_cnt; i++)
                                                                                                                  m_txn.NewOrder.total amount =
                                                                          m txn.NewOrder.total amount + m txn.NewOrder.OL[i].ol amount;
(m_txn.NewOrder.OL[i].ol_supply_w_id != m_txn.NewOrder.w_id)
                                                                                                                  DiscardNextRows(0);
m txn.NewOrder.o all local = 0; // at least one remote warehouse
                                                                                                        // get remaining values for w_tax, d_tax, o_id,
                                                                          c last, c discount, c credit, o entry d, commit flag
                              dbrpcparam(m_dbproc, NULL, 0, SQLINT1,
                                                                                                        if (dbresults(m_dbproc) != SUCCEED)
-1, -1, (BYTE *) &m txn.NewOrder.o all local);
                                                                          ThrowError(CDBLIBERR::eDbResults);
                              for (i = 0; i < m \ txn.NewOrder.o \ ol \ cnt; i++)
                                                                                                        if (dbnextrow(m_dbproc) != REG_ROW)
                                        dbrpcparam(m_dbproc, NULL, 0,
SQLINT4, -1, -1, (BYTE *) &m txn.NewOrder.OL[i].ol i id);
                                                                          ThrowError(CDBLIBERR::eDbNextRow);
                                        dbrpcparam(m_dbproc, NULL, 0,
SQLINT2, -1, -1, (BYTE *) &m txn.NewOrder.OL[i].ol supply w id);
                                                                                                        if (dbnumcols(m dbproc) != 8)
                                        dbrpcparam(m_dbproc, NULL, 0,
SQLINT2, -1, -1, (BYTE *) &m txn.NewOrder.OL[i].ol quantity);
                                                                          ThrowError(CDBLIBERR::eWrongNumCols);
                                                                                                        if (pData=dbdata(m_dbproc, 1))
                              if(dbrpcexec(m dbproc) == FAIL)
ThrowError(CDBLIBERR::eDbRpcExec);
                                                                                                                  dbconvert(m dbproc,
                                                                          SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,1), SQLFLT8, (BYTE
                                                                          *)&m txn.NewOrder.w tax, 8);
                                                                                                        if (pData=dbdata(m_dbproc, 2))
                              // Get order line results
                              m txn.NewOrder.total amount = 0;
                                                                                                                  dbconvert(m dbproc,
                              for (i = 0; i < m_txn.NewOrder.o_ol_cnt; i++)
                                                                          SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,2), SQLFLT8, (BYTE
                                                                          *)&m txn.NewOrder.d tax, 8);
                                                                                                        if (pData=dbdata(m_dbproc, 3))
                                        if (dbresults(m_dbproc) !=
SUCCEED)
                                                                                                                  m txn.NewOrder.o id =
                                                                          (*(DBINT *) pData);
ThrowError(CDBLIBERR::eDbResults);
                                                                                                        if (pData=dbdata(m dbproc, 4))
                                        if (dbnumcols(m dbproc) != 5)
                                                                          UtilStrCpy(m txn.NewOrder.c last, pData, dbdatlen(m dbproc, 4));
                                                                                                        if (pData=dbdata(m dbproc, 5))
ThrowError(CDBLIBERR::eWrongNumCols);
                                                                                                                  dbconvert(m dbproc,
                                                                          SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m dbproc,5), SQLFLT8, (BYTE
                                        if (dbnextrow(m_dbproc) !=
                                                                          *)&m_txn.NewOrder.c_discount, 8);
REG ROW)
                                                                                                        if (pData=dbdata(m dbproc, 6))
                                                                          UtilStrCpy(m_txn.NewOrder.c_credit, pData, dbdatlen(m_dbproc, 6));
ThrowError(CDBLIBERR::eDbNextRow);
                                                                                                        if (pData=dbdata(m_dbproc, 7))
                                        if(pData=dbdata(m_dbproc, 1))
                                                                                                                  datetime = *((DBDATETIME *)
UtilStrCpy(m_txn.NewOrder.OL[i].ol_i_name, pData, dbdatlen(m_dbproc, 1));
                                                                          pData);
                                        if(pData=dbdata(m dbproc, 2))
```

```
iTryCount = 0;
                                        dbdatecrack(m_dbproc, &daterec,
                                                                                     int
&datetime);
                                                                                     const BYTE
                                                                                                         *pData;
                                        m txn.NewOrder.o entry d.year
= daterec.year;
                                                                                     ResetError();
                                        m_txn.NewOrder.o_entry_d.month
= daterec.month;
                                                                                     while (TRUE)
                                        m txn.NewOrder.o entry d.day
= daterec.day;
                                                                                              try
                                        m_txn.NewOrder.o_entry_d.hour
= daterec.hour;
                                                                                                         dbrpcinit(m dbproc, "tpcc payment", 0);
m_txn.NewOrder.o_entry_d.minute = daterec.minute;
                                                                                                         dbrpcparam(m_dbproc, NULL, 0, SQLINT2,
                                                                           -1, -1, (BYTE *) &m txn.Payment.w id);
m_txn.NewOrder.o_entry_d.second = daterec.second;
                                                                                                         dbrpcparam(m_dbproc, NULL, 0, SQLINT2,
                                                                           -1, -1, (BYTE *) &m_txn.Payment.c_w_id);
                                                                                                         dbrpcparam(m_dbproc, NULL, 0, SQLFLT8,
                              if (pData=dbdata(m dbproc, 8))
                                        commit_flag = (*(DBTINYINT *)
                                                                           -1, -1, (BYTE *) &m txn.Payment.h amount);
pData);
                                                                                                         dbrpcparam(m_dbproc, NULL, 0, SQLINT1,
                                                                           -1, -1, (BYTE *) &m_txn.Payment.d_id);
                              DiscardNextRows(0);
                                                                                                         dbrpcparam(m dbproc, NULL, 0, SQLINT1,
                                                                           -1, -1, (BYTE *) &m_txn.Payment.c_d_id);
                              DiscardNextResults(0);
                                                                                                         dbrpcparam(m dbproc, NULL, 0, SQLINT4,
                                                                           -1, -1, (BYTE *) &m txn.Payment.c id);
                              if (commit flag == 1)
                                                                                                         // if customer id is zero, then payment is by
                                        m txn.NewOrder.total amount *=
                                                                          name
((1 + m txn.NewOrder.w tax + m txn.NewOrder.d tax) * (1 -
                                                                                                         if (m txn.Payment.c id == 0)
m_txn.NewOrder.c_discount));
                                                                                                                   dbrpcparam(m_dbproc, NULL, 0,
                                                                          SQLCHAR, -1, strlen(m txn.Payment.c last), (unsigned char
m_txn.NewOrder.exec_status_code = eOK;
                                                                           *)m_txn.Payment.c_last);
                              else
                                                                                                         if (dbrpcexec(m_dbproc) == FAIL)
m txn.NewOrder.exec status code = eInvalidItem;
                                                                          ThrowError(CDBLIBERR::eDbRpcExec);
                                                                                                         if (dbresults(m dbproc) != SUCCEED)
                              return;
                    catch (CSQLERR *e)
                                                                          ThrowError(CDBLIBERR::eDbResults);
                                                                                                         if (dbnextrow(m_dbproc) != REG_ROW)
                              if ((e->m_msgno == 1205 ||
                                        (e->m msgno ==
iErrOleDbProvider &&
                                                                          ThrowError(CDBLIBERR::eDbNextRow);
                                        strstr(e->m msgtext,
                                                                                                         if (dbnumcols(m_dbproc) != 27)
sErrTimeoutExpired) != NULL)) &&
                                        (++iTryCount <= iMaxRetries))
                                                                          ThrowError(CDBLIBERR::eWrongNumCols);
                                        // hit deadlock; backoff for
increasingly longer period
                                                                                                         if (pData=dbdata(m dbproc, 1))
                                                                                                                   m_{txn.Payment.c_id} = *((DBINT)
                                        delete e:
                                        Sleep(10 * iTryCount);
                                                                           *) pData);
                                                                                                         if (pData=dbdata(m_dbproc, 2))
                              else
                                                                                                                   UtilStrCpy(m txn.Payment.c last,
                                                                          pData, dbdatlen(m_dbproc, 2));
                                        throw:
                                                                                                         if (pData=dbdata(m_dbproc, 3))
                    // while (TRUE)
                                                                                                                   datetime = *((DBDATETIME *)
                                                                          pData);
          if (iTryCount)
                    throw new
                                                                                                                   dbdatecrack(m_dbproc, &daterec,
CTPCC DBLIB ERR(CTPCC DBLIB ERR::ERR RETRIED TRANS,
                                                                          &datetime);
iTryCount);
                                                                                                                   m_txn.Payment.h_date.year =
                                                                          daterec.year;
                                                                                                                   m_txn.Payment.h_date.month =
                                                                          daterec.month;
void CTPCC_DBLIB::Payment()
                                                                                                                   m_txn.Payment.h_date.day =
                                                                          daterec.day;
          DBDATETIME
                              datetime;
                                                                                                                   m txn.Payment.h date.hour =
          DBDATEREC
                              daterec;
                                                                          daterec.hour;
```

```
m_txn.Payment.h_date.minute =
                                                                                                                     m txn.Payment.c since.month =
daterec.minute;
                                                                            daterec.month;
                                         m txn.Payment.h date.second =
                                                                                                                     m txn.Payment.c since.day =
daterec.second;
                                                                            daterec.day;
                                                                                                                     m_txn.Payment.c_since.hour =
                               if (pData=dbdata(m dbproc, 4))
                                                                            daterec.hour;
                                                                                                                     m txn.Payment.c since.minute =
UtilStrCpy(m txn.Payment.w street 1, pData, dbdatlen(m dbproc, 4));
                                                                            daterec.minute;
                               if (pData=dbdata(m dbproc, 5))
                                                                                                                     m_txn.Payment.c_since.second =
                                                                            daterec.second;
UtilStrCpy(m_txn.Payment.w_street_2, pData, dbdatlen(m_dbproc, 5));
                               if (pData=dbdata(m dbproc, 6))
                                                                                                           if(pData=dbdata(m_dbproc, 23))
                                                                            UtilStrCpy(m_txn.Payment.c_credit, pData, dbdatlen(m_dbproc, 23));
UtilStrCpy(m_txn.Payment.w_city, pData, dbdatlen(m_dbproc, 6));
                               if (pData=dbdata(m dbproc, 7))
                                                                                                           if(pData=dbdata(m dbproc, 24))
                                                                                                                     dbconvert(m dbproc,
                                                                            SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m dbproc, 24), SQLFLT8,
UtilStrCpy(m txn.Payment.w state, pData, dbdatlen(m dbproc, 7));
                               if (pData=dbdata(m_dbproc, 8))
                                                                            (BYTE *)&m_txn.Payment.c_credit_lim, 8);
                                                                                                           if(pData=dbdata(m dbproc, 25))
                                         UtilStrCpy(m_txn.Payment.w_zip,
pData, dbdatlen(m dbproc, 8));
                                                                                                                     dbconvert(m dbproc,
                                                                            SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,25), SQLFLT8,
                               if (pData=dbdata(m_dbproc, 9))
                                                                            (BYTE *)&m txn.Payment.c discount, 8);
UtilStrCpy(m_txn.Payment.d_street_1, pData, dbdatlen(m_dbproc, 9));
                                                                                                           if(pData=dbdata(m dbproc, 26))
                               if (pData=dbdata(m dbproc, 10))
                                                                                                                     dbconvert(m dbproc,
                                                                            SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,26), SQLFLT8,
                                                                            (BYTE *)&m_txn.Payment.c_balance, 8);
UtilStrCpy(m txn.Payment.d street 2, pData, dbdatlen(m dbproc, 10));
                               if (pData=dbdata(m dbproc, 11))
                                                                                                           if(pData=dbdata(m dbproc, 27))
                                         UtilStrCpy(m_txn.Payment.d_city,
                                                                                                                     UtilStrCpy(m_txn.Payment.c_data,
pData, dbdatlen(m dbproc, 11));
                                                                            pData, dbdatlen(m dbproc, 27));
                               if (pData=dbdata(m_dbproc, 12))
                                                                                                           DiscardNextRows(0);
UtilStrCpy(m_txn.Payment.d_state, pData, dbdatlen(m_dbproc, 12));
                                                                                                           DiscardNextResults(0);
                               if (pData=dbdata(m dbproc, 13))
                                         UtilStrCpy(m txn.Payment.d zip,
                                                                                                           if(m_txn.Payment.c_id == 0)
pData, dbdatlen(m_dbproc, 13));
                               if (pData=dbdata(m dbproc, 14))
                                                                                                                     throw new CTPCC DBLIB ERR(
                                                                            CTPCC DBLIB_ERR::ERR_INVALID_CUST );
                                         UtilStrCpy(m_txn.Payment.c_first,
pData, dbdatlen(m dbproc, 14));
                               if (pData=dbdata(m_dbproc, 15))
                                                                                                                     m_txn.Payment.exec_status_code
                                                                            = eOK:
UtilStrCpy(m txn.Payment.c middle, pData, dbdatlen(m dbproc, 15));
                               if (pData=dbdata(m_dbproc, 16))
                                                                                                           return:
UtilStrCpy(m_txn.Payment.c_street_1, pData, dbdatlen(m_dbproc, 16));
                                                                                                catch (CSQLERR *e)
                               if (pData=dbdata(m dbproc, 17))
                                                                                                           if ((e->m_msgno == 1205 ||
UtilStrCpy(m txn.Payment.c street 2, pData, dbdatlen(m dbproc, 17));
                                                                                                                     (e->m msgno ==
                               if (pData=dbdata(m dbproc, 18))
                                                                            iErrOleDbProvider &&
                                         UtilStrCpy(m_txn.Payment.c_city,
                                                                                                                     strstr(e->m_msgtext,
                                                                            sErrTimeoutExpired) != NULL)) &&
pData, dbdatlen(m_dbproc, 18));
                               if (pData=dbdata(m_dbproc, 19))
                                                                                                                     (++iTryCount <= iMaxRetries))
UtilStrCpy(m_txn.Payment.c_state, pData, dbdatlen(m_dbproc, 19));
                                                                                                                     // hit deadlock; backoff for
                               if (pData=dbdata(m dbproc, 20))
                                                                            increasingly longer period
                                         UtilStrCpy(m_txn.Payment.c_zip,
                                                                                                                     delete e;
                                                                                                                     Sleep(10 * iTryCount);
pData, dbdatlen(m_dbproc, 20));
                               if (pData=dbdata(m dbproc, 21))
                                                                                                           else
UtilStrCpy(m txn.Payment.c phone, pData, dbdatlen(m dbproc, 21));
                                                                                                                     throw;
                               if (pData=dbdata(m_dbproc, 22))
                                                                                                // while (TRUE)
                                         datetime = *((DBDATETIME *)
pData);
                                                                                      if (iTryCount)
                                         dbdatecrack(m_dbproc, &daterec,
                                                                                                throw new
                                                                            CTPCC_DBLIB_ERR(CTPCC_DBLIB_ERR::ERR_RETRIED_TRANS,
&datetime);
                                         m txn.Payment.c since.year =
                                                                            iTryCount);
daterec.year;
```

```
if(pData=dbdata(m_dbproc, 2))
                                                                          m_txn.OrderStatus.OL[i].ol_i_id = (*(DBINT *) pData);
void CTPCC DBLIB::OrderStatus()
                                                                                                                   if(pData=dbdata(m_dbproc, 3))
          int
                                         i;
          DBDATETIME
                              datetime;
                                                                          m txn.OrderStatus.OL[i].ol quantity = (*(DBSMALLINT *) pData);
          DBDATEREC
                              daterec;
                                                                                                                   if(pData=dbdata(m dbproc, 4))
                                                                                                                              dbconvert(m dbproc,
          int
                                        iTryCount = 0;
                                                                           SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m dbproc,4),
          RETCODE
          const BYTE
                               *pData;
                                                                           SQLFLT8, (BYTE *)&m_txn.OrderStatus.OL[i].ol_amount, 8);
                                                                                                                   if(pData=dbdata(m_dbproc, 5))
          ResetError();
                                                                                                                              datetime =
                                                                           *((DBDATETIME *) pData);
          while (TRUE)
                                                                                                                              dbdatecrack(m_dbproc,
                                                                           &daterec, &datetime);
                    trv
                              dbrpcinit(m_dbproc, "tpcc_orderstatus", 0);
                                                                           m_txn.OrderStatus.OL[i].ol_delivery_d.year = daterec.year;
                              dbrpcparam(m_dbproc, NULL, 0, SQLINT2,
                                                                           m_txn.OrderStatus.OL[i].ol_delivery_d.month = daterec.month;
-1, -1, (BYTE *) &m txn.OrderStatus.w id);
                              dbrpcparam(m_dbproc, NULL, 0, SQLINT1,
                                                                           m txn.OrderStatus.OL[i].ol delivery d.day = daterec.day;
-1, -1, (BYTE *) &m txn.OrderStatus.d id);
                              dbrpcparam(m_dbproc, NULL, 0, SQLINT4,
                                                                           m_txn.OrderStatus.OL[i].ol_delivery_d.hour = daterec.hour;
-1, -1, (BYTE *) &m_txn.OrderStatus.c_id);
                                                                           m txn.OrderStatus.OL[i].ol delivery d.minute = daterec.minute;
                              // if customer id is zero, then order status is by
name
                                                                           m txn.OrderStatus.OL[i].ol delivery d.second = daterec.second;
                              if (m txn.OrderStatus.c id == 0)
                                         dbrpcparam(m dbproc, NULL, 0,
                                                                                                                   i++;
SQLCHAR, -1, strlen(m_txn.OrderStatus.c_last), (unsigned char
*)m_txn.OrderStatus.c_last);
                                                                                                         m_txn.OrderStatus.o_ol_cnt = i;
                              if(dbrpcexec(m dbproc) == FAIL)
                                                                                                         if (dbresults(m dbproc) != SUCCEED)
ThrowError(CDBLIBERR::eDbRpcExec);
                                                                           ThrowError(CDBLIBERR::eDbResults);
                                                                                                         if (dbnextrow(m dbproc) != REG ROW)
                              // Get order lines
                              if (dbresults(m dbproc) != SUCCEED)
                                                                           ThrowError(CDBLIBERR::eDbNextRow);
                                         if ((m DbLibErr == NULL) &&
(m_SqlErr == NULL))
                                                                                                         if (dbnumcols(m_dbproc) != 8)
                                                   throw new
CTPCC_DBLIB_ERR( CTPCC_DBLIB_ERR::ERR_NO_SUCH_ORDER );
                                                                           ThrowError(CDBLIBERR::eWrongNumCols);
                                         else
                                                                                                         if(pData=dbdata(m dbproc, 1))
ThrowError(CDBLIBERR::eDbResults);
                                                                                                                   m_txn.OrderStatus.c_id =
                                                                           (*(DBINT *) pData);
                                                                                                         if(pData=dbdata(m_dbproc, 2))
                              if (dbnumcols(m dbproc) != 5)
                                                                           UtilStrCpy(m_txn.OrderStatus.c_last, pData, dbdatlen(m_dbproc,2));
ThrowError(CDBLIBERR::eWrongNumCols);
                                                                                                         if(pData=dbdata(m_dbproc, 3))
                              i = 0;
                                                                           UtilStrCpy(m_txn.OrderStatus.c_first, pData, dbdatlen(m_dbproc,3));
                                                                                                         if(pData=dbdata(m dbproc, 4))
                              while (TRUE)
                                                                           UtilStrCpy(m txn.OrderStatus.c middle, pData, dbdatlen(m dbproc, 4));
                                         rc = dbnextrow(m dbproc);
                                         if (rc == NO\_MORE\_ROWS)
                                                   break;
                                                                                                         if(pData=dbdata(m dbproc, 5))
                                         if (rc != REG ROW)
                                                                                                                   datetime = *((DBDATETIME *)
ThrowError(CDBLIBERR::eDbNextRow);
                                                                           pData);
                                                                                                                   dbdatecrack(m_dbproc, &daterec,
                                         if(pData=dbdata(m dbproc, 1))
                                                                           &datetime);
                                                                                                                   m_txn.OrderStatus.o_entry_d.year
m\_txn.OrderStatus.OL[i].ol\_supply\_w\_id = (*(DBSMALLINT *) pData);
                                                                           = daterec.year;
```

```
m txn.OrderStatus.o entry d.month = daterec.month;
                                                                                    int
                                        m txn.OrderStatus.o entry d.day
                                                                                                                   iTryCount = 0;
                                                                                    int
= daterec.day;
                                                                                     const BYTE
                                                                                                         *pData;
                                        m_txn.OrderStatus.o_entry_d.hour
 = daterec.hour;
                                                                                    ResetError();
m_txn.OrderStatus.o_entry_d.minute = daterec.minute;
                                                                                    while (TRUE)
m_txn.OrderStatus.o_entry_d.second = daterec.second;
                                                                                              try
                              if(pData=dbdata(m dbproc, 6))
                                                                                                         dbrpcinit(m_dbproc, "tpcc_delivery", 0);
                                        m_txn.OrderStatus.o_carrier_id =
                                                                                                         dbrpcparam(m_dbproc, NULL, 0, SQLINT2,
(*(DBSMALLINT *) pData);
                                                                           -1, -1, (BYTE *) &m_txn.Delivery.w_id);
                              if(pData=dbdata(m_dbproc, 7))
                                                                                                         dbrpcparam(m_dbproc, NULL, 0, SQLINT1,
                                        dbconvert(m dbproc,
                                                                          -1, -1, (BYTE *) &m_txn.Delivery.o_carrier_id);
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,7),
                                                              SOLFLT8.
                                                                                                         if (dbrpcexec(m_dbproc) == FAIL)
(BYTE *)&m txn.OrderStatus.c balance, 8);
                              if(pData=dbdata(m_dbproc, 8))
                                                                          ThrowError(CDBLIBERR::eDbRpcExec);
                                        m txn.OrderStatus.o id =
(*(DBINT *) pData);
                                                                                                         if (dbresults(m dbproc) != SUCCEED)
                              DiscardNextRows(0);
                                                                          ThrowError(CDBLIBERR::eDbResults);
                              DiscardNextResults(0);
                                                                                                         if (dbnextrow(m dbproc) != REG ROW)
                              if (m txn.OrderStatus.o ol cnt == 0)
                                                                          ThrowError(CDBLIBERR::eDbNextRow);
                                        throw new CTPCC DBLIB ERR(
CTPCC DBLIB ERR::ERR NO SUCH ORDER);
                                                                                                         if (dbnumcols(m dbproc)!= 10)
                              else if (m_txn.OrderStatus.c_id == 0 &&
m_txn.OrderStatus.c_last[0] == 0
                                                                          ThrowError(CDBLIBERR::eWrongNumCols);
                                        throw new CTPCC DBLIB ERR(
CTPCC_DBLIB_ERR::ERR_INVALID_CUST );
                                                                                                         for (i=0; i<10; i++)
                                                                                                                   if (pData = dbdata(m_dbproc, i+1))
                                                                                                                             m txn.Delivery.o id[i]
m txn.OrderStatus.exec status code = eOK;
                                                                          = *((DBINT *)pData);
                              return:
                    catch (CSQLERR *e)
                                                                                                         DiscardNextRows(0);
                                                                                                         DiscardNextResults(0);
                              if ((e->m_msgno == 1205 ||
                                                                                                         m txn.Delivery.exec status code = eOK;
                                        (e->m msgno =
iErrOleDbProvider &&
                                                                                                        return;
                                        strstr(e->m msgtext,
sErrTimeoutExpired) != NULL)) &&
                                                                                              catch (CSQLERR *e)
                                        (++iTryCount <= iMaxRetries))
                                                                                                         if ((e->m msgno == 1205 ||
                                        // hit deadlock; backoff for
                                                                                                                   (e->m_msgno ==
                                                                          iErrOleDbProvider &&
increasingly longer period
                                        delete e;
                                                                                                                   strstr(e->m_msgtext,
                                        Sleep(10 * iTryCount);
                                                                          sErrTimeoutExpired) != NULL)) &&
                                                                                                                   (++iTryCount <= iMaxRetries))
                              else
                                                                                                                   // hit deadlock; backoff for
                                        throw;
                                                                          increasingly longer period
                    // while (TRUE)
                                                                                                                   delete e;
                                                                                                                   Sleep(10 * iTryCount);
//
          if (iTryCount)
                    throw new
                                                                                                         else
CTPCC_DBLIB_ERR(CTPCC_DBLIB_ERR::ERR_RETRIED_TRANS,
                                                                                                                   throw;
iTryCount);
                                                                                              // while (TRUE)
                                                                          //
                                                                                    if (iTryCount)
void CTPCC DBLIB::Delivery()
```

```
throw new
CTPCC DBLIB ERR(CTPCC DBLIB ERR::ERR RETRIED TRANS,
                                                                                                int
                                                                                                                    m_msgno;
iTryCount);
                                                                                                                    m msgstate;
                                                                                                int
                                                                                                                     m_severity;
                                                                                                int
                                                                                                char *m_msgtext;
void CTPCC DBLIB::ResetError()
                                                                                                int ErrorType() {return ERR_TYPE_SQL;};
          if (m DbLibErr != NULL)
                                                                                                int ErrorNum() {return m msgno;};
                                                                                                char *ErrorText() {return m_msgtext;};
                    delete m DbLibErr;
                    m_DbLibErr = (CDBLIBERR*)NULL;
                                                                           class CDBLIBERR: public CBaseErr
          if (m_SqlErr != NULL)
                                                                                      public:
                                                                                                enum ACTION
                    delete m_SqlErr;
                    m SqlErr = (CSQLERR*)NULL;
                                                                                                          eNone,
                                                                                                          eUnknown,
          return;
                                                                                                                                                   //
}
                                                                                                          eLogin,
                                                                           error from dblogin
                                                                                                          eDbOpen,
                                                                                                                                         // error from
                                                                           dbopen
tpcc dblib.h
                                                                                                          eDbUse,
                                                                                                                                                   //
                                                                           error from dbuse
          FILE:
                              TPCC DBLIB.H
                                                                                                          eDbSqlExec,
                                                                                                                                                   //
                                         Microsoft TPC-C Kit Ver.
                                                                           error from dbsqlexec
4.20.000
                                                                                                          eDbSet,
                                                                                                                                                   //
                                         Copyright Microsoft, 1999
                                                                           error from one of the dbset* routines
         All Rights Reserved
                                                                                                                                                   //
                                                                                                          eDbNextRow,
                                                                           error from dbnextrow
                                         Version 4.10.000 audited by
                                                                                                          eWrongRowCount,
                                                                                                                                         // more or
Richard Gimarc, Performance Metrics, 3/17/99
                                                                           less rows returned than expected
                                                                                                          eWrongNumCols,
                                                                                                                                         // more or
          PURPOSE:
                              Header file for TPC-C txn class
                                                                           less columns returned than expected
implementation.
                                                                                                          eDbResults,
                                                                                                                                                   //
                                                                           error from dbresults
  Change history:
                                                                                                          eDbRpcExec,
                                                                                                                                                   //
                    4.20.000 - updated rev number to match kit
                                                                           error from dbrpcexec
                                                                                                          eDbSetMaxProcs,
                                                                                                                                         // error from
#pragma once
                                                                           dbsetmaxprocs
                                                                                                          eDbProcHandler
                                                                                                                                         // error from
#ifndef PDBPROCESS
                                                                           either dbprocerrhandle or dbprocmsghandle
#define DBPROCESS void // dbprocess structure type
typedef DBPROCESS * PDBPROCESS;
                                                                                                CDBLIBERR(ACTION eAction, int severity = 0, int
                                                                           dberror = 0, int oserr = 0)
// need to declare functions for import, unless define has already been created
// by the DLL's .cpp module for export.
                                                                                                          m_eAction = eAction;
#ifndef DllDecl
                                                                                                          m severity = severity;
#define DllDecl __declspec( dllimport )
                                                                                                          m dberror = dberror;
#endif
                                                                                                          m oserr = oserr;
class CSQLERR: public CBaseErr
                                                                                                          m dberrstr = NULL;
                                                                                                          m_oserrstr = NULL;
          public:
                                                                                                };
```

CSQLERR(void)

~CSQLERR()

**}**;

**}**;

 $m_msgno = 0;$ 

 $m_msgstate = 0;$ 

m\_severity = 0;

m msgtext = NULL;

delete [] m\_msgtext;

~CDBLIBERR()

ACTION m\_eAction;

char \*m dberrstr;

delete [] m\_dberrstr;

delete [] m\_oserrstr;

m\_severity;

m dberror;

m\_oserr;

{

};

int

int

int

```
~CTPCC_DBLIB(void);
                   char *m oserrstr;
                    int ErrorType() {return ERR TYPE DBLIB;};
                                                                                             inline PNEW ORDER DATA
                    int ErrorNum() {return m_dberror;};
                                                                         BuffAddr_NewOrder()
                                                                                                                 { return &m_txn.NewOrder; };
                   char *ErrorText() {return m_dberrstr;};
                                                                                             inline PPAYMENT DATA
                                                                         BuffAddr Payment()
                                                                                                       { return &m txn.Payment; };
                                                                                             inline PDELIVERY DATA
};
                                                                         BuffAddr_Delivery()
                                                                                                       { return &m txn.Delivery; };
                                                                                             in line\ PSTOCK\_LEVEL\_DATA\ BuffAddr\_StockLevel()
class CTPCC DBLIB ERR: public CBaseErr
                                                                         { return &m_txn.StockLevel; };
                                                                                             inline PORDER_STATUS_DATA
         public:
                   enum CTPCC_DBLIB_ERRS
                                                                         BuffAddr_OrderStatus()
                                                                                                       { return &m_txn.OrderStatus; };
                             ERR_WRONG_SP_VERSION = 1,
                                                                     //
                                                                                             void NewOrder
                                                                                                                           ();
                                                                                             void Payment
"Wrong version of stored procs on database server"
                                                                                                                           ();
                             ERR INVALID CUST,
                                                                                             void Delivery
                                                                                                                           ();
// "Invalid Customer id,name."
                                                                                             void StockLevel
                                                                                                                           ();
                             ERR_NO_SUCH_ORDER,
                                                                                             void OrderStatus
                                                                                                                 ();
// "No orders found for customer."
                             ERR RETRIED TRANS,
// "Retries before transaction succeeded."
                                                                                             // these are public because they must be called from the
                                                                         dblib err handler and msg hangler
                   }:
                                                                                             // outside of the class
                   CTPCC DBLIB ERR( int iErr ) { m errno = iErr;
                                                                                             void SetDbLibError(int severity, int dberr, int oserr,
m_iTryCount = 0; };
                                                                         LPCSTR dberrstr, LPCSTR oserrstr);
                                                                                             void SetSqlError( int msgno, int msgstate, int severity,
                    CTPCC DBLIB ERR( int iErr, int iTryCount ) {
                                                                         LPCSTR msgtext );
m_errno = iErr; m_iTryCount = iTryCount; };
                                                                         };
                    int
                                        m errno:
                   int
                                       m iTryCount;
                                                                         extern "C" DllDecl CTPCC DBLIB* CTPCC DBLIB new
                                                                                   ( LPCSTR szServer, LPCSTR szUser, LPCSTR szPassword,
                   int ErrorType() {return ERR TYPE TPCC DBLIB;};
                                                                         LPCSTR szHost, LPCSTR szDatabase );
                   int ErrorNum() {return m errno;};
                                                                         typedef CTPCC_DBLIB* (TYPE_CTPCC_DBLIB)(LPCSTR, LPCSTR,
                   char *ErrorText();
                                                                         LPCSTR, LPCSTR, LPCSTR);
class DllDecl CTPCC_DBLIB: public CTPCC_BASE
                                                                         tpcc_enc.cpp
          private:
                                                                         // ctpcc_enc.cpp: implementation of the CTPCC_ENCINA class.
                    // declare variables and private functions here...
                   PDBPROCESS
                                        m dbproc;
                                                                         CDBLIBERR
                                        *m DbLibErr;
not allocated until needed (maybe never)
                                                                         #include <windows.h>
                                        *m_SqlErr;
                    CSOLERR
                                                                         #include cess.h>
// not allocated until needed (maybe never)
                                                                         #include <stdio.h>
                                                 m MaxRetries;
                                                                         #include <stdarg.h>
// retry count on deadlock
                                                                         #include <malloc.h>
                                                                         #include <stdlib.h>
                    void DiscardNextRows(int iExpectedCount);
                                                                         #include <string.h>
                    void DiscardNextResults(int iExpectedCount);
                                                                         #include <time.h>
                    void ThrowError( CDBLIBERR::ACTION eAction );
                                                                         #include <sys\timeb.h>
                    void ResetError();
                                                                         #include <io.h>
                   union
                                                                         #ifdef ICECAP
                                                                         #include <icapexp.h>
                             NEW ORDER DATA
                                                                         #endif
NewOrder;
                             PAYMENT_DATA
                                                           Payment;
                                                                         // need to declare functions for export
                             DELIVERY DATA
                                                           Delivery;
                                                                         #define DllDecl __declspec( dllexport )
                             STOCK LEVEL DATA
                                                           StockLevel;
                             ORDER_STATUS_DATA
                                                           OrderStatus;
                                                                         #include "..\..\common\src\trans.h"
                                                                                                               //tpckit transaction header contains
                                                                         definitions of structures specific to TPC-C
                                                                         #include "..\..\common\src\error.h"
         public:
                                                                         #include "..\..\common\src\txn base.h"
                   CTPCC_DBLIB(LPCSTR szServer, LPCSTR szUser,
                                                                         #include "tpcc_enc.h"
LPCSTR szPassword, LPCSTR szHost, LPCSTR szDatabase );
                                                                         #include "..\include\tpcc_type.h"
```

```
#include "mon client.h"
#include "client utils.h"
                                                                          void CTPCC ENCINA::Payment()
static CRITICAL SECTION
                               TpCriticalSection;
extern "C" char *errFile;
                                                                            if (send_payment(sizeof(ENC_DATA), (unsigned char *)m_txn) ==
                                                                          TRPC ERROR)
BOOL APIENTRY DllMain(HANDLE hModule, DWORD ul reason for call,
                                                                                              throw new CENCERR(TRPC ERROR);
LPVOID lpReserved)
                                                                            if ( m_txn->ErrorType != ERR_SUCCESS )
                                                                                              throw new CENCERR( m txn->ErrorType, m txn->error
    switch(ul_reason_for_call)
         case DLL PROCESS ATTACH:
                                                                          void CTPCC_ENCINA::Delivery()
             DisableThreadLibraryCalls(hModule);
             InitializeCriticalSection(&TpCriticalSection);
             break;
                                                                                    // Note: Delivery txn code in the tuxedo server does not implement
                                                                          logging of the delivery
         case DLL PROCESS DETACH:
                                                                                    //
                                                                                         txn results, so cannot be used as is to run an auditable TPC-C
             DeleteCriticalSection(&TpCriticalSection);
                                                                          result. For that
             break:
                                                                                         reason, delivery txns should not be done via Tuxedo.
                                                                                    //
                                                                                         The code is included for completeness.
         default:
                                                                                    //m_txn->u.Delivery.exec_status_code = eDeliveryFailed;
             /* nothing */;
                                                                                    //return:
    return TRUE;
                                                                                    // Note: If we use the delivery thread in tpcc.dll, it is not possible to
                                                                          get to this
                                                                                         point for delivery txns. But if we use Encina delivery server,
// wrapper routine for class constructor
                                                                          the code is
  _declspec(dllexport) CTPCC_ENCINA* CTPCC_ENCINA new()
                                                                                         needed. It is suggested using the delivery thread in tpcc.dll
                                                                          since it is
          return new CTPCC ENCINA();
                                                                                         convenient and provides best performance.
                                                                                    GetLocalTime(&m_txn->u.Delivery.queue_time);
// wrapper routine for enroll client
                                                                            if (send_delivery(sizeof(ENC_DATA), (unsigned char *)m_txn) ==
  declspec(dllexport) CTPCC ENCINA* CTPCC ENCINA post init()
                                                                          TRPC ERROR)
                                                                                              m_txn->u.Delivery.exec_status_code = eDeliveryFailed;
          enroll client();
                                                                            else
          return NULL;
                                                                                              m_txn->u.Delivery.exec_status_code = eOK;
// constructor and destructor
                                                                          void CTPCC_ENCINA::StockLevel()
CTPCC ENCINA::CTPCC ENCINA()
                    Add initialization of ENCINA Structures if any
                                                                            if (send stock level(sizeof(ENC DATA), (unsigned char *)m txn) ==
                                                                          TRPC ERROR)
          m_txn = (ENC_DATA *)malloc(sizeof(ENC_DATA));
          if (m txn == NULL)
                                                                                              throw new CENCERR(TRPC ERROR);
                    throw new CENCERR(ERR TYPE MEMORY,
ERR FATAL_LEVEL);
                                                                            if ( m_txn->ErrorType != ERR_SUCCESS )
                                                                                              throw new CENCERR( m txn->ErrorType, m txn->error
CTPCC ENCINA::~CTPCC ENCINA()
          // free the data structure allocated with tpalloc
                                                                          void CTPCC ENCINA::OrderStatus()
          free((char *)m txn);
                                                                            if (send order status(sizeof(ENC DATA), (unsigned char *)m txn) ==
                                                                          TRPC ERROR)
void CTPCC_ENCINA::NewOrder()
                                                                                              throw new CENCERR(TRPC ERROR);
          // question: if we need to prepare the data?
                                                                            if ( m txn->ErrorType != ERR SUCCESS )
  if (send_new_order(sizeof(ENC_DATA), (unsigned char *)m_txn) ==
                                                                                              throw new CENCERR( m_txn->ErrorType, m_txn->error
TRPC ERROR)
                    throw new CENCERR(TRPC_ERROR);
  if ( m txn->ErrorType != ERR SUCCESS )
                                                                          char *CENCERR::ErrorText()
                    throw new CENCERR( m_txn->ErrorType, m_txn->error
                                                                                    if (m_iErrorType == TRPC_ERROR)
);
```

```
inline PNEW ORDER DATA
                    sprintf( m szErrorText, "Error: ENCINA TRPC error
                                                                          BuffAddr NewOrder()
                                                                                                                   { return &m txn->u.NewOrder;
(see log file %s for details)", errFile);
                                                                                               inline PPAYMENT DATA
                                                                                                         { return &m_txn->u.Payment;
                                                                          BuffAddr_Payment()
          else
                    sprintf( m szErrorText, "Error: Class %d, error # %d",
                                                                                               inline PDELIVERY DATA
m iErrorType, m iError);
                                                                          BuffAddr Delivery()
                                                                                                         { return &m_txn->u.Delivery; };
                                                                                               inline PSTOCK_LEVEL_DATA BuffAddr_StockLevel()
          return m szErrorText;
};
                                                                           { return &m_txn->u.StockLevel; };
                                                                                               inline PORDER STATUS DATA
                                                                           BuffAddr_OrderStatus()
                                                                                                         { return &m_txn->u.OrderStatus; };
tpcc enc.h
                                                                                               void NewOrder
                                                                                                                             ();
                                                                                               void Payment
                                                                                                                             ();
          FILE:
                              TPCC ENCINA.H
                                                                                               void Delivery
                                                                                                                             ();
                                         Microsoft TPC-C Kit Ver.
                                                                                               void StockLevel
                                                                                                                             ();
4.10.000
                                                                                               void OrderStatus
                                                                                                                   ();
                                        not yet audited
          PURPOSE:
                              Header file for TPC-C Encina class
implementation.
                                                                          class CENCERR: public CBaseErr
                                         Copyright Microsoft, 1999
*
         All Rights Reserved
                                                                                     private:
*/
                                                                                               char
                                                                                                         m_szErrorText[64];
                                                                                     public:
#if !defined(_TPCC_ENCINA_H_)
                                                                                               int
                                                                                                                   m errno;
#define TPCC_ENCINA_H_
                                                                                                                   m_iErrorType; // match
                                                                                               int
                                                                          ErrorType in CTPCC ENCINA
#pragma once
                                                                                                                   m_iError;
                                                                                               int
                                                                                                                                       // machine
                                                                          error in CTPCC_ENCINA
// need to declare functions for import, unless define has already been created
// by the DLL's .cpp module for export.
                                                                                               // use this interface for genuine Encina errors
#ifndef DllDecl
                                                                                               CENCERR( int iErr )
#define DllDecl declspec( dllimport )
#endif
                                                                                                         m errno = iErr;
                                                                                                                             // ENCINA error
                                                                                                         m_iErrorType = ERR_TYPE_ENCINA;
class CTPCC_ENCINA: public CTPCC_BASE
                                                                                                         m iError = 0;
                                                                                                                             // only meaningful if
                                                                          m_errno == TPEOS
          private:
                                                                                               };
                    struct ENC_DATA
                                                                                               // use this interface to impersonate a non-Encina error
                              int
                                                                          type
ErrorType;
                                                                                               CENCERR( int iErrorType, int iError )
                              int
error;
                                                                                                         m_iErrorType = iErrorType;
                                                                                                         m_iError = iError;
                              union
                                                                                                         m errno = iError; // ???
                                         NEW ORDER DATA
NewOrder;
                                                                                               // A CENCERR class can impersonate another class,
                                         PAYMENT_DATA
                                                                          which happens if the error
Payment;
                                                                                               // was not actually a Tuxedo error, but was simply
                                         DELIVERY_DATA
                                                                          transmitted back via Tuxedo.
Delivery;
                                                                                               int ErrorType()
                                         STOCK LEVEL DATA
StockLevel;
                                                                                                         return m iErrorType;
                                         ORDER_STATUS_DATA
OrderStatus;
                              } u;
                                                                                               int ErrorNum() {return m_errno;};
                    } *m_txn;
                                                                                               char *ErrorText();
          public:
                                                                          // wrapper routine for class constructor:
                    CTPCC ENCINA();
                                                                          extern "C" __declspec(dllexport) CTPCC_ENCINA* CTPCC_ENCINA_new();
                    virtual ~CTPCC_ENCINA();
                                                                          extern "C" declspec(dllexport) CTPCC_ENCINA*
                                                                          CTPCC_ENCINA_post_init();
```

```
typedef CTPCC_ENCINA* (TYPE_CTPCC_ENCINA)();
                                                                           SQLAllocHandleStd(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv)
                                                                           != SQL SUCCESS)
#endif // !defined(_TPCC_ENCINA_H_)
                                                                                                                    return FALSE;
                                                                                                         break:
tpcc odbc.cpp
                                                                                               case DLL PROCESS DETACH:
                                                                                                         if (henv != NULL)
          FILE:
                              TPCC_ODBC.CPP
                                                                                                                    SQLFreeEnv(henv);
                                         Microsoft TPC-C Kit Ver.
                                                                                                         break;
4.20.000
                                         Copyright Microsoft, 1999
                                                                                               default:
          All Rights Reserved
                                                                                                         /* nothing */;
                                         Version 4.10.000 audited by
                                                                                     return TRUE;
Richard Gimarc, Performance Metrics, 3/17/99
          PURPOSE:
                              Implements ODBC calls for TPC-C txns.
                                                                           /* FUNCTION: CTPCC_ODBC_ERR::ErrorText
          Contact: Charles Levine (clevine@microsoft.com)
  Change history:
                    4.20.000 - updated rev number to match kit
                                                                           char* CTPCC ODBC ERR::ErrorText(void)
                    4.10.001 - not deleting error class in catch handler on
deadlock retry;
                                                                                     int i:
                                          not a functional bug, but a
memory leak
                                                                                     static SERRORMSG errorMsgs[] =
                                                                                               { ERR_WRONG_SP_VERSION,
#include <windows.h>
                                                                           "Wrong version of stored procs on database server"
#include <stdio.h>
                                                                                               { ERR_INVALID_CUST,
#include <assert.h>
                                                                           "Invalid Customer id,name."
#define DBNTWIN32
                                                                                               { ERR_NO_SUCH_ORDER,
                                                                                                                                        "No orders
#include <sqltypes.h>
                                                                           found for customer.
#include <sql.h>
#include <sqlext.h>
                                                                                               { ERR RETRIED TRANS,
                                                                                                                                        "Retries
#include <odbcss.h>
                                                                           before transaction succeeded."
#ifdef ICECAP
#include <icapexp.h>
#endif
                                                                                     };
// need to declare functions for export
                                                                                     static char szNotFound[] = "Unknown error number.";
#define DllDecl __declspec( dllexport )
                                                                                     for(i=0; errorMsgs[i].szMsg[0]; i++)
#include "..\..\common\src\error.h"
#include "..\..\common\src\trans.h"
                                                                                               if ( m_errno == errorMsgs[i].iError )
#include "..\..\common\src\txn_base.h"
                                                                                                         break:
#include "tpcc odbc.h"
                                                                                     if (!errorMsgs[i].szMsg[0])
// version string; must match return value from tpcc_version stored proc
                                                                                               return szNotFound;
const char sVersion[] = "4.10.000";
                                                                                     else
                                                                                               return errorMsgs[i].szMsg;
const iMaxRetries = 10;
                                        // how many retries on deadlock
const int iErrOleDbProvider = 7312;
                                                                           // wrapper routine for class constructor
const char sErrTimeoutExpired[] = "Timeout expired";
                                                                             declspec(dllexport) CTPCC ODBC* CTPCC ODBC new(
                                                                                     LPCSTR szServer,
                                                                                                                   // name of SQL server
static SQLHENV henv = SQL_NULL_HENV;
                                                                                     LPCSTR szUser,
                                                                                                                              // user name for login
// ODBC environment handle
                                                                                     LPCSTR szPassword,
                                                                                                                    // password for login
                                                                                     LPCSTR szHost,
                                                                                                                              // not used
BOOL APIENTRY DIIMain(HMODULE hModule, DWORD
                                                                                     LPCSTR szDatabase)
                                                                                                                   // name of database to use
ul reason for call, LPVOID lpReserved)
                                                                                     return new CTPCC_ODBC( szServer, szUser, szPassword, szHost,
          switch( ul_reason_for_call )
                                                                           szDatabase);
```

case DLL PROCESS ATTACH:

DisableThreadLibraryCalls(hModule);

```
CTPCC ODBC::CTPCC ODBC (
                                                                                       rc = SQLExecDirect(m hstmt, (unsigned char *)buffer,
                                                                     SQL NTS);
         LPCSTR szServer,
                                                        // name of
                                                                                       if (rc != SQL SUCCESS && rc !=
SQL server
         LPCSTR szUser,
                                                                     SQL_SUCCESS_WITH_INFO)
                                                                 //
user name for login
                                                                                                 ThrowError(CODBCERR::eExecDirect);
         LPCSTR szPassword,
                                                        // password
for login
                                                                                       // verify that version of stored procs on server is correct
         LPCSTR szHost,
                                                                                        char db sp version[10];
                                                                                        strcpy(buffer, "{call tpcc version}");
not used
                                                                                       rc = SQLExecDirect(m_hstmt, (unsigned char *)buffer,
         LPCSTR szDatabase
                                                        // name of
database to use
                                                                     SQL_NTS);
                                                                                       if (rc != SQL SUCCESS && rc !=
                                                                     SQL SUCCESS WITH INFO)
         RETCODE
                                                                                                 ThrowError(CODBCERR::eExecDirect);
                                     rc;
                                                                                        if (SQLBindCol(m hstmt, 1, SQL C CHAR,
                                                                     &db_sp_version, sizeof(db_sp_version), NULL) != SQL_SUCCESS)
         // initialization
         m hdbc = SQL NULL HDBC;
                                                                                                 ThrowError(CODBCERR::eBindCol);
         m hstmt = SQL NULL HSTMT;
                                                                                        if ( SQLFetch(m_hstmt) == SQL_ERROR )
                                                                                                 ThrowError(CODBCERR::eFetch);
         m hstmtNewOrder = SQL NULL HSTMT;
                                                                                        if (strcmp(db sp version,sVersion))
         m_hstmtPayment = SQL_NULL_HSTMT;
                                                                                                 throw new CTPCC_ODBC_ERR(
         m hstmtDelivery = SQL NULL HSTMT;
                                                                     CTPCC ODBC ERR::ERR WRONG SP VERSION);
         m hstmtOrderStatus = SQL NULL HSTMT;
         m hstmtStockLevel = SQL NULL HSTMT;
                                                                                       SQLFreeHandle(SQL HANDLE STMT, m hstmt);
                                                                              }
         m descNewOrderCols1 = SQL NULL HDESC;
         m descNewOrderCols2 = SQL NULL HDESC;
                                                                              // Bind parameters for each of the transactions
         m_descOrderStatusCols1 = SQL_NULL_HDESC;
                                                                              InitNewOrderParams();
         m descOrderStatusCols2 = SQL NULL HDESC;
                                                                              InitPaymentParams();
                                                                              InitOrderStatusParams();
                                                                              InitDeliveryParams();
         if ( SQLAllocHandle(SQL_HANDLE_DBC, henv, &m_hdbc) !=
                                                                              InitStockLevelParams();
SQL_SUCCESS)
                  ThrowError(CODBCERR::eAllocHandle);
                                                                     CTPCC_ODBC::~CTPCC_ODBC( void )
         if (SQLSetConnectOption(m hdbc, SQL PACKET SIZE, 4096)!=
SQL_SUCCESS)
                                                                              // note: descriptors are automatically released when the connection is
                   ThrowError(CODBCERR::eConnOption);
                                                                     dropped
                                                                              SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtNewOrder);
                                                                              SQLFreeHandle(SQL HANDLE STMT, m hstmtPayment);
                                                                              SQLFreeHandle(SQL HANDLE STMT, m hstmtDelivery);
                   char
                                               szConnectStr[256];
                                               szOutStr[1024];
                                                                              SOLFreeHandle(SQL HANDLE STMT, m_hstmtOrderStatus);
                  char
                  SQLSMALLINT
                                               iOutStrLen;
                                                                              SQLFreeHandle(SQL HANDLE STMT, m hstmtStockLevel);
                  sprintf( szConnectStr, "DRIVER=SQL
                                                                              SQLDisconnect(m hdbc);
                                                                              SQLFreeHandle(SQL_HANDLE_DBC, m_hdbc);
Server;SERVER=%s;UID=%s;PWD=%s;DATABASE=%s",
                            szServer, szUser, szPassword, szDatabase );
                  rc = SQLDriverConnect(m_hdbc, NULL,
                                                                     void CTPCC_ODBC::ThrowError( CODBCERR::ACTION eAction )
(SQLCHAR*)szConnectStr, sizeof(szConnectStr),
                            (SQLCHAR*)szOutStr, sizeof(szOutStr),
                                                                              RETCODE
&iOutStrLen, SQL DRIVER NOPROMPT);
                                                                              SDWORD
                                                                                                 lNativeError;
                                                                              char
                                                                                                 szState[6];
                  if (rc != SQL_SUCCESS && rc !=
                                                                              char
                                                                                                 szMsg[SQL MAX MESSAGE LENGTH];
SQL SUCCESS_WITH_INFO)
                            ThrowError(CODBCERR::eConnect);
                                                                     szTmp[6*SQL_MAX_MESSAGE_LENGTH];
                                                                              CODBCERR *pODBCErr;
                                                                                                                             // not
                                                                     allocated until needed (maybe never)
         if (SQLAllocHandle(SQL HANDLE STMT, m hdbc, &m hstmt)
!= SQL_SUCCESS)
                                                                              pODBCErr = new CODBCERR();
                  ThrowError(CODBCERR::eAllocHandle);
                                                                              pODBCErr->m NativeError = 0;
                                                                              pODBCErr->m_eAction = eAction;
                                                                              pODBCErr->m_bDeadLock = FALSE;
                  char
                                     buffer[128];
                  // set some options affecting connection behavior
                                                                              szTmp[0] = 0;
                  strcpy(buffer, "set nocount on set XACT_ABORT ON");
                                                                              while (TRUE)
```

```
if (SQLBindCol(m hstmt, 1, SQL C SLONG,
                   rc = SQLError(henv, m hdbc, m hstmt, (BYTE
                                                                      &m_txn.StockLevel.low_stock, 0, NULL) != SQL_SUCCESS )
*)&szState, &lNativeError,
                                                                                          ThrowError(CODBCERR::eBindCol);
                                                 (BYTE *)&szMsg,
sizeof(szMsg), NULL);
                   if (rc == SQL_NO_DATA)
                            break;
                                                                      void CTPCC ODBC::StockLevel()
                   // check for deadlock
                                                                                RETCODE
                   if (INativeError == 1205 || (INativeError ==
                                                                                int
iErrOleDbProvider &&
                            strstr(szMsg, sErrTimeoutExpired) != NULL))
                                                                                m_hstmt = m_hstmtStockLevel;
                            pODBCErr->m_bDeadLock = TRUE;
                                                                                while (TRUE)
                   // capture the (first) database error
                   if (pODBCErr->m_NativeError == 0 && lNativeError !=
                                                                                          trv
0)
                            pODBCErr->m NativeError = lNativeError;
                                                                                                   rc = SQLExecDirectW(m hstmt,
                                                                       (SQLWCHAR*)L"{call tpcc_stocklevel(?,?,?)}", SQL_NTS);
                   // quit if there isn't enough room to concatenate error text
                                                                                                   if (rc != SQL_SUCCESS && rc !=
                                                                      SQL SUCCESS WITH INFO)
                   if ((strlen(szMsg) + 2) > (sizeof(szTmp) - strlen(szTmp))
)
                                                                       ThrowError(CODBCERR::eExecDirect);
                            break;
                   // include line break after first error msg
                                                                                                   if (SQLFetch(m hstmt) == SQL ERROR)
                   if (szTmp[0] != 0)
                            strcat( szTmp, "\n");
                                                                       ThrowError(CODBCERR::eFetch);
                   streat( szTmp, szMsg );
                                                                                                   SQLFreeStmt(m_hstmt, SQL_CLOSE);
         if (pODBCErr->m_odbcerrstr != NULL)
                                                                                                   m_txn.StockLevel.exec_status_code = eOK;
                                                                                                   break;
                   delete [] pODBCErr->m_odbcerrstr;
                   pODBCErr->m_odbcerrstr = NULL;
                                                                                          catch (CODBCERR *e)
                                                                                                   if ((!e->m_bDeadLock) || (++iTryCount >
         if (strlen(szTmp) > 0)
                                                                      iMaxRetries))
                   pODBCErr->m odbcerrstr = new char[ strlen(szTmp)+1
                                                                                                   // hit deadlock; backoff for increasingly longer
];
                   strcpy( pODBCErr->m_odbcerrstr, szTmp );
                                                                      period
                                                                                                   Sleep(10 * iTryCount);
         SQLFreeStmt(m hstmt, SQL CLOSE);
         throw pODBCErr;
                                                                                }
                                                                                if (iTryCount)
void CTPCC ODBC::InitStockLevelParams()
                                                                                          throw new
                                                                      CTPCC ODBC ERR(CTPCC ODBC ERR::ERR RETRIED TRANS,
         if ( SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc,
                                                                      iTryCount);
&m hstmtStockLevel) != SQL SUCCESS )
                   ThrowError(CODBCERR::eAllocHandle);
                                                                      void CTPCC ODBC::InitNewOrderParams()
         m_hstmt = m_hstmtStockLevel;
                                                                                if ( SQLAllocHandle(SQL HANDLE STMT, m hdbc,
                                                                      &m hstmtNewOrder) != SQL SUCCESS
         if ( SQLBindParameter(m hstmt, ++i, SQL PARAM INPUT,
                                                                                          || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
SQL C SSHORT, SQL SMALLINT, 0, 0, &m txn.StockLevel.w id, 0,
                                                                       &m descNewOrderCols1) != SQL SUCCESS
NULL) != SQL_SUCCESS
                                                                                          || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
                   || SQLBindParameter(m hstmt, ++i,
                                                                       &m descNewOrderCols2) != SQL SUCCESS
SQL_PARAM_INPUT, SQL_C_UTINYINT, SQL_TINYINT, 0, 0,
&m txn.StockLevel.d id, 0, NULL) != SQL SUCCESS
                                                                                          ThrowError(CODBCERR::eAllocHandle);
                   SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SSHORT, SQL_SMALLINT, 0, 0,
                                                                                m_hstmt = m_hstmtNewOrder;
&m_txn.StockLevel.threshold, 0, NULL) != SQL_SUCCESS
                                                                                if (SQLSetStmtAttrW(m_hstmt, SQL_ATTR_APP_ROW_DESC,
                   ThrowError(CODBCERR::eBindParam);
                                                                      m descNewOrderCols1, SQL IS POINTER) != SQL SUCCESS)
                                                                                          ThrowError(CODBCERR::eSetStmtAttr);
```

```
IBM Corporation TPC Benchmark C Full Disclosure Report - November 2001
```

iTryCount = 0;

throw:

```
int i = 0;
         if ( SQLBindParameter(m hstmt, ++i, SQL PARAM INPUT,
SQL C SSHORT, SQL SMALLINT, 0, 0, &m txn.NewOrder.w id, 0,
NULL) != SQL_SUCCESS
                   || SOLBindParameter(m_hstmt, ++i,
SQL PARAM INPUT, SQL C UTINYINT, SQL TINYINT, 0, 0,
&m txn.NewOrder.d id, 0, NULL) != SQL SUCCESS
                    SQLBindParameter(m hstmt, ++i
SQL_PARAM_INPUT, SQL_C_SLONG, SQL_INTEGER, 0, 0,
&m_txn.NewOrder.c id, 0, NULL) != SQL SUCCESS
                   SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_UTINYINT, SQL_TINYINT, 0, 0, &m_txn.NewOrder.o_ol_cnt, 0, NULL) != SQL_SUCCESS
                   || SQLBindParameter(m_hstmt, ++i,
SQL PARAM INPUT, SQL C UTINYINT, SQL TINYINT, 0, 0,
&m_txn.NewOrder.o_all_local, 0, NULL) != SQL_SUCCESS
                   ThrowError(CODBCERR::eBindParam);
         for (int j=0; j<MAX OL NEW ORDER ITEMS; j++)
                   if ( SQLBindParameter(m hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SLONG, SQL_INTEGER, 0, 0,
&m_txn.NewOrder.OL[j].ol_i_id, 0, NULL) != SQL_SUCCESS
                            || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SSHORT, SQL_SMALLINT, 0, 0,
&m txn.NewOrder.OL[j].ol supply w id, 0, NULL) != SQL SUCCESS
                            || SQLBindParameter(m_hstmt, ++i,
SQL PARAM INPUT, SQL C SSHORT, SQL SMALLINT, 0, 0,
&m_txn.NewOrder.OL[j].ol_quantity, 0, NULL) != SQL_SUCCESS
                            ThrowError(CODBCERR::eBindParam);
         // set the bind offset pointer
         if (SQLSetStmtAttrW(m hstmt,
SQL_ATTR_ROW_BIND_OFFSET_PTR, &m_BindOffset,
SQL IS POINTER) != SQL SUCCESS)
                  ThrowError(CODBCERR::eSetStmtAttr);
         if ( SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m txn.NewOrder.OL[0].ol i name,
sizeof(m_txn.NewOrder.OL[0].ol_i_name), NULL) != SQL_SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C SSHORT,
&m_txn.NewOrder.OL[0].ol_stock, 0, NULL) != SQL_SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
&m txn.NewOrder.OL[0].ol brand generic,
sizeof(m_txn.NewOrder.OL[0].ol_brand_generic), NULL) != SQL_SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C DOUBLE,
&m_txn.NewOrder.OL[0].ol_i_price, 0, NULL) != SQL_SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C DOUBLE,
&m_txn.NewOrder.OL[0].ol_amount, 0, NULL) != SQL_SUCCESS
                  ThrowError(CODBCERR::eBindCol);
         // associate the column bindings for the second result set
         if (SQLSetStmtAttrW(m_hstmt, SQL_ATTR_APP_ROW_DESC,
m descNewOrderCols2, SQL IS POINTER) != SQL SUCCESS)
                   ThrowError(CODBCERR::eSetStmtAttr);
         if ( SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.NewOrder.w_tax, 0, NULL) != SQL_SUCCESS
                   || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.NewOrder.d_tax, 0, NULL) != SQL SUCCESS
                   || SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.NewOrder.o_id, 0, NULL) != SQL_SUCCESS
```

```
|| SQLBindCol(m hstmt, ++i, SQL C CHAR,
&m txn.NewOrder.c last, sizeof(m txn.NewOrder.c last), NULL) !=
SQL SUCCESS
                    || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m txn.NewOrder.c discount, 0, NULL) != SQL SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
&m_txn.NewOrder.c_credit, sizeof(m_txn.NewOrder.c_credit), NULL) !=
SQL SUCCESS
                    || SQLBindCol(m hstmt, ++i,
SQL C TYPE TIMESTAMP, &m txn.NewOrder.o entry d, 0, NULL) !=
SQL_SUCCESS
                    || SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m no commit flag, 0, NULL) != SQL SUCCESS
                    ThrowError(CODBCERR::eBindCol);
void CTPCC_ODBC::NewOrder()
                                                           i;
          RETCODE
                                                           rc;
                                                           iTryCount =
          int
0;
                    // 0
                                  2
                    // 012345678901234567890123456789
          wchar_t
                                                  szSqlTemplate[] =
L"{call tpcc neworder(?,?,?,?,","
                     L"?,?,?,?,?,?,?,?,?,?,?,?,"
                     L"?,?,?,?,?,?,?,?,?,?,?,?,"
                     L"?,?,?,?,?,?,?,?,?,?,?,?)}";
         m_hstmt = m_hstmtNewOrder;
         // associate the parameter and column bindings for this transaction
         if (SQLSetStmtAttrW(m hstmt, SQL ATTR APP ROW DESC,
m descNewOrderCols1, SQL IS POINTER) != SQL SUCCESS)
                    ThrowError(CODBCERR::eSetStmtAttr);
         // clip statement buffer based on number of parameters
          // fixed part is 29 chars and variable part is 6 chars per line item
          i = 29 + m_txn.NewOrder.o_ol_cnt*6;
          wcscpy(&szSqlTemplate[i], L")}");
         // check whether any order lines are for a remote warehouse
          m txn.NewOrder.o all local = 1;
          for (i = 0; i \le m_{txn.NewOrder.o_ol_cnt; i++)
                   if (m_txn.NewOrder.OL[i].ol_supply_w_id !=
m txn.NewOrder.w_id)
                              m_txn.NewOrder.o_all_local = 0; // at least
one remote warehouse
                              break:
          while (TRUE)
                    try
                              m BindOffset = 0;
                              rc = SQLExecDirectW(m_hstmt,
(SQLWCHAR*)szSqlTemplate, SQL NTS);
```

```
if (rc != SQL SUCCESS && rc !=
SQL SUCCESS WITH INFO)
                                                                               if (iTryCount)
                                                                                         throw new
                                                                      CTPCC_ODBC_ERR(CTPCC_ODBC_ERR::ERR_RETRIED_TRANS,
ThrowError(CODBCERR::eExecDirect);
                                                                      iTryCount);
                            // Get order line results
                            m txn.NewOrder.total amount = 0;
                            for (i = 0; i \le m \ txn. New Order.o \ ol \ cnt; i++)
                                                                      void CTPCC ODBC::InitPaymentParams()
                                                                                if ( SQLAllocHandle(SQL HANDLE_STMT, m_hdbc,
                                      // set the bind offset value...
                                                                      &m_hstmtPayment) != SQL_SUCCESS)
                                      m BindOffset = i *
sizeof(m txn.NewOrder.OL[0]);
                                                                                         ThrowError(CODBCERR::eAllocHandle);
                                                                                m_hstmt = m_hstmtPayment;
                                      if (SQLFetch(m hstmt) ==
SQL ERROR)
                                                                                int i = 0;
                                                                                if ( SQLBindParameter(m hstmt, ++i, SQL PARAM INPUT,
ThrowError(CODBCERR::eFetch);
                                                                      SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.Payment.w_id, 0, NULL)
                                                                      != SQL SUCCESS
                                      // move to the next resultset
                                                                                         || SQLBindParameter(m hstmt, ++i,
                                      if (SQLMoreResults(m hstmt) ==
                                                                      SQL_PARAM_INPUT, SQL_C_SSHORT, SQL_SMALLINT, 0, 0,
SQL ERROR)
                                                                      &m txn.Payment.c w id, 0, NULL) != SQL SUCCESS
                                                                                         || SQLBindParameter(m hstmt, ++i,
ThrowError(CODBCERR::eMoreResults);
                                                                      SQL PARAM INPUT, SQL C DOUBLE, SQL NUMERIC, 6, 2,
                                                                      &m_txn.Payment.h_amount, 0, NULL) != SQL_SUCCESS
                                      m txn.NewOrder.total amount +=
                                                                                         || SQLBindParameter(m_hstmt, ++i,
m_txn.NewOrder.OL[i].ol_amount;
                                                                      SQL PARAM INPUT, SQL C UTINYINT, SQL TINYINT, 0, 0,
                                                                      &m_txn.Payment.d_id, 0, NULL) != SQL_SUCCESS
                                                                                         || SQLBindParameter(m hstmt, ++i,
                            // associate the column bindings for the
                                                                      SQL_PARAM_INPUT, SQL_C_UTINYINT, SQL_TINYINT, 0, 0,
second result set
                                                                      &m_txn.Payment.c_d_id, 0, NULL) != SQL_SUCCESS
                            if (SQLSetStmtAttrW(m hstmt,
                                                                                         || SQLBindParameter(m hstmt, ++i,
SQL ATTR APP ROW DESC, m descNewOrderCols2, SQL IS POINTER
                                                                      SQL PARAM INPUT, SQL C SLONG, SQL INTEGER, 0, 0,
) != SQL_SUCCESS )
                                                                      &m txn.Payment.c id, 0, NULL) != SQL SUCCESS
                                                                                          SQLBindParameter(m_hstmt, ++i,
ThrowError(CODBCERR::eSetStmtAttr);
                                                                      SQL PARAM INPUT, SQL C CHAR, SQL CHAR,
                                                                      sizeof(m_txn.Payment.c_last), 0, &m_txn.Payment.c_last,
                            if (SQLFetch(m hstmt) == SQL ERROR)
                                                                      sizeof(m txn.Payment.c last), NULL) != SQL SUCCESS
ThrowError(CODBCERR::eFetch);
                                                                                         ThrowError(CODBCERR::eBindParam);
                            SQLFreeStmt(m_hstmt, SQL_CLOSE);
                                                                               if ( SQLBindCol(m hstmt, ++i, SQL C SLONG,
                            if (m no commit flag == 1)
                                                                      &m_txn.Payment.c_id,
                                                                                                            0, NULL) != SQL SUCCESS
                                                                                         || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                      m txn.NewOrder.total amount *=
                                                                      &m_txn.Payment.c_last,
                                                                                                            sizeof(m_txn.Payment.c_last),
((1 + m txn.NewOrder.w tax + m txn.NewOrder.d tax) * (1 -
                                                                      NULL) != SQL SUCCESS
m txn.NewOrder.c discount));
                                                                                         || SQLBindCol(m hstmt, ++i,
                                                                      SQL_C_TYPE_TIMESTAMP, &m_txn.Payment.h_date,
m txn.NewOrder.exec status code = eOK;
                                                                      0, NULL) != SQL SUCCESS
                                                                                         || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
                            else
                                                                                                  sizeof(m_txn.Payment.w_street 1), NULL) !=
                                                                      &m txn.Payment.w street 1,
                                                                      SQL_SUCCESS
m_txn.NewOrder.exec_status_code = eInvalidItem;
                                                                                         || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                                                                                  sizeof(m txn.Payment.w street 2), NULL) !=
                                                                      &m txn.Payment.w street 2,
                            break:
                                                                      SQL SUCCESS
                                                                                         || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                   catch (CODBCERR *e)
                                                                      &m txn.Payment.w city,
                                                                                                            sizeof(m_txn.Payment.w_city),
                                                                      NULL) != SQL SUCCESS
                            if ((!e->m bDeadLock) || (++iTryCount >
                                                                                         || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
iMaxRetries))
                                                                      &m txn.Payment.w state,
                                                                                                            sizeof(m txn.Payment.w state),
                                      throw;
                                                                      NULL) != SQL SUCCESS
                                                                                         || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
                            // hit deadlock; backoff for increasingly longer
                                                                      &m_txn.Payment.w_zip,
                                                                                                             sizeof(m_txn.Payment.w_zip),
period
                                                                      NULL) != SQL_SUCCESS
                            delete e:
                                                                                         || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                            Sleep(10 * iTryCount);
                                                                                                  sizeof(m_txn.Payment.d_street_1), NULL) !=
                                                                      &m_txn.Payment.d_street_1,
                                                                      SQL_SUCCESS
```

}

```
|| SQLBindCol(m hstmt, ++i, SQL C CHAR,
                            sizeof(m_txn.Payment.d_street_2), NULL) !=
                                                                                                  rc = SQLExecDirectW(m hstmt,
&m txn.Payment.d street 2,
SQL SUCCESS
                                                                      (SQLWCHAR*)L"{call tpcc payment(?,?,?,?,?,?)}", SQL NTS);
                   || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
                                                                                                  if (rc != SQL_SUCCESS && rc !=
&m txn.Payment.d city,
                                      sizeof(m_txn.Payment.d_city),
                                                                      SQL SUCCESS WITH INFO)
NULL) != SQL SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                                                      ThrowError(CODBCERR::eExecDirect);
                                      sizeof(m txn.Payment.d state),
&m txn.Payment.d state,
NULL) != SQL SUCCESS
                                                                                                  if (SQLFetch(m hstmt) == SQL ERROR)
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
&m_txn.Payment.d_zip,
                                                                      ThrowError(CODBCERR::eFetch);
                                      sizeof(m_txn.Payment.d_zip),
NULL) != SQL_SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                                                                                  SQLFreeStmt(m hstmt, SQL CLOSE);
&m_txn.Payment.c first,
                                      sizeof(m_txn.Payment.c_first),
NULL) != SQL_SUCCESS
                                                                                                  if (m txn.Payment.c id == 0)
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                                                                                            throw new CTPCC ODBC ERR(
                                                                      CTPCC ODBC ERR::ERR INVALID CUST );
&m txn.Payment.c middle,
                            sizeof(m txn.Payment.c middle), NULL) !=
SQL SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                                                                                            m_txn.Payment.exec_status_code
&m txn.Payment.c street 1,
                            sizeof(m txn.Payment.c street 1), NULL) !=
                                                                      = eOK;
SQL_SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                                                                                  break;
&m_txn.Payment.c_street_2,
                            sizeof(m_txn.Payment.c_street_2), NULL) !=
SQL_SUCCESS
                                                                                         catch (CODBCERR *e)
                   || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m txn.Payment.c city,
                                      sizeof(m_txn.Payment.c_city),
                                                                                                  if ((!e->m_bDeadLock) || (++iTryCount >
NULL) != SQL SUCCESS
                                                                      iMaxRetries))
                   || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
                                                                                                            throw:
&m txn.Payment.c state,
                                      sizeof(m txn.Payment.c state),
NULL) != SQL SUCCESS
                                                                                                  // hit deadlock; backoff for increasingly longer
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                                                      period
&m_txn.Payment.c_zip,
                                      sizeof(m_txn.Payment.c_zip),
                                                                                                   delete e;
NULL) != SQL_SUCCESS
                                                                                                  Sleep(10 * iTryCount);
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
&m_txn.Payment.c_phone,
                                      sizeof(m_txn.Payment.c_phone),
                                                                               }
NULL) != SQL SUCCESS
                   || SQLBindCol(m_hstmt, ++i,
                                                                               if (iTryCount)
SQL C TYPE TIMESTAMP, &m txn.Payment.c since,
                                                                                         throw new
0, NULL) != SQL_SUCCESS
                                                                      CTPCC_ODBC_ERR(CTPCC_ODBC_ERR::ERR_RETRIED_TRANS,
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                                                      iTryCount);
&m txn.Payment.c credit,
                            sizeof(m txn.Payment.c credit), NULL) !=
SQL_SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C DOUBLE,
                                                                      void CTPCC ODBC::InitOrderStatusParams()
&m_txn.Payment.c_credit_lim,0, NULL) != SQL_SUCCESS
                   || SOLBindCol(m hstmt, ++i, SOL C DOUBLE,
                                                                               if ( SQLAllocHandle(SQL HANDLE STMT, m hdbc,
                            0, NULL) != SQL_SUCCESS
                                                                      &m_hstmtOrderStatus) != SQL_SUCCESS
&m_txn.Payment.c_discount,
                   || SQLBindCol(m hstmt, ++i, SQL C DOUBLE,
                                                                                         || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
                            0, NULL) != SQL SUCCESS
&m txn.Payment.c balance,
                                                                      &m descOrderStatusCols1) != SQL SUCCESS
                                                                                         || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
                   || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m txn.Payment.c data,
                                      sizeof(m txn.Payment.c data),
                                                                      &m descOrderStatusCols2) != SQL SUCCESS
NULL) != SQL_SUCCESS
                                                                                         ThrowError(CODBCERR::eAllocHandle);
                   ThrowError(CODBCERR::eBindCol);
                                                                               m hstmt = m hstmtOrderStatus;
}
void CTPCC ODBC::Payment()
                                                                               if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC,
                                                                      m descOrderStatusCols1, SQL IS POINTER) != SQL SUCCESS)
         RETCODE
                                                                                         ThrowError(CODBCERR::eSetStmtAttr);
                                      iTryCount = 0;
                                                                               int i = 0;
         m hstmt = m hstmtPayment;
                                                                               if ( SQLBindParameter(m hstmt, ++i, SQL PARAM INPUT,
                                                                      SQL C SSHORT, SQL SMALLINT, 0, 0, &m txn.OrderStatus.w id, 0,
                                                                      NULL) != SQL_SUCCESS
         if (m txn.Payment.c id != 0)
                   m_txn.Payment.c_last[0] = 0;
                                                                                         SQLBindParameter(m_hstmt, ++i,
                                                                      SQL_PARAM_INPUT, SQL_C_UTINYINT, SQL_TINYINT, 0, 0,
         while (TRUE)
                                                                      &m txn.OrderStatus.d id, 0, NULL) != SQL SUCCESS
                   try
```

```
|| SQLBindParameter(m hstmt, ++i,
                                                                                int
SQL PARAM INPUT, SQL C SLONG, SQL INTEGER, 0, 0,
                                                                       iTryCount = 0;
&m txn.OrderStatus.c id, 0, NULL) != SQL SUCCESS
                                                                                 RETCODE
                    SQLBindParameter(m_hstmt, ++i,
SQL PARAM INPUT, SQL C CHAR, SQL CHAR,
sizeof(m txn.OrderStatus.c last), 0, &m txn.OrderStatus.c last,
                                                                                 m hstmt = m hstmtOrderStatus;
sizeof(m txn.OrderStatus.c last), NULL) != SQL SUCCESS
                                                                                 if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC,
                   ThrowError(CODBCERR::eBindParam);
                                                                       m descOrderStatusCols1, SQL IS POINTER) != SQL SUCCESS)
                                                                                          ThrowError(CODBCERR::eSetStmtAttr);
         // configure block cursor
         if ( SQLSetStmtAttrW(m hstmt,
                                                                                 if (m txn.OrderStatus.c id != 0)
SQL ATTR ROW BIND TYPE,
                                                                                          m txn.OrderStatus.c last[0] = 0;
(SQLPOINTER)sizeof(m_txn.OrderStatus.OL[0]), 0) != SQL_SUCCESS
                   || SQLSetStmtAttrW(m hstmt,
                                                                                 while (TRUE)
SQL_ATTR_ROWS_FETCHED_PTR, &m_RowsFetched, 0) !=
SQL SUCCESS
                                                                                          try
                   ThrowError(CODBCERR::eSetStmtAttr);
                                                                                                    // configure block cursor
                                                                                                    if (SQLSetStmtAttrW(m hstmt,
                                                                       SQL_ATTR_ROW_ARRAY_SIZE, (SQLPOINTER)1, 0) != SQL_SUCCESS)
         i = 0;
         if ( SQLBindCol(m hstmt, ++i, SQL C SSHORT,
&m_txn.OrderStatus.OL[0].ol_supply_w_id, 0, NULL) != SQL_SUCCESS
                                                                       ThrowError(CODBCERR::eSetStmtAttr);
                   || SQLBindCol(m hstmt, ++i, SQL C SLONG,
&m_txn.OrderStatus.OL[0].ol_i_id, 0, NULL) != SQL_SUCCESS
                                                                                                    rc = SQLExecDirectW(m_hstmt,
                                                                        \begin{aligned} &(SQLWCHAR*)L"\{call\ tpcc\_orderstatus(?,?,?,?)\}",\ SQL\_NTS);\\ &\quad if\ (\ ((rc == SQL\_SUCCESS\_WITH\_INFO)); \end{aligned} 
                   || SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT,
&m txn.OrderStatus.OL[0].ol quantity, 0, NULL) != SQL SUCCESS
                   || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
                                                                       && (m_RowsFetched != 0)) \parallel (rc == SQL_ERROR))
&m txn.OrderStatus.OL[0].ol amount, 0, NULL) != SQL SUCCESS
                   || SQLBindCol(m_hstmt, ++i,
                                                                       ThrowError(CODBCERR::eExecDirect);
SQL C TYPE TIMESTAMP, &m txn.OrderStatus.OL[0].ol delivery d, 0,
NULL) != SQL_SUCCESS
                                                                                                    // configure block cursor
                                                                                                    if (SQLSetStmtAttrW(m hstmt,
                   ThrowError(CODBCERR::eBindCol);
                                                                       SOL ATTR ROW ARRAY SIZE.
                                                                       (SQLPOINTER)MAX_OL_ORDER_STATUS_ITEMS, 0) != SQL_SUCCESS
         if (SQLSetStmtAttrW(m_hstmt, SQL_ATTR_APP_ROW_DESC,
m descOrderStatusCols2, SQL IS POINTER) != SQL SUCCESS)
                                                                       ThrowError(CODBCERR::eSetStmtAttr);
                   ThrowError(CODBCERR::eSetStmtAttr);
                                                                                                    rc = SQLFetchScroll( m hstmt,
                                                                       SQL FETCH NEXT, 0);
         i = 0;
         if ( SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
                                                                                                    if ( ((rc == SQL_SUCCESS_WITH_INFO)
&m txn.OrderStatus.c id, 0, NULL) != SQL SUCCESS
                                                                       && (m RowsFetched != 0)) \parallel (rc == SQL ERROR))
                    SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m txn.OrderStatus.c last, sizeof(m txn.OrderStatus.c last), NULL) !=
                                                                       ThrowError(CODBCERR::eFetchScroll);
SQL_SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                                                                                    m txn.OrderStatus.o ol cnt =
&m txn.OrderStatus.c first, sizeof(m txn.OrderStatus.c first), NULL) !=
                                                                       (short)m RowsFetched;
SQL_SUCCESS
                   || SQLBindCol(m hstmt, ++i, SQL C CHAR,
                                                                                                    if (m txn.OrderStatus.o ol cnt != 0)
&m_txn.OrderStatus.c_middle, sizeof(m_txn.OrderStatus.c_middle), NULL) !=
SQL SUCCESS
                                                                                                              if (SQLSetStmtAttrW(m hstmt,
                                                                       SQL_ATTR_APP_ROW_DESC, m_descOrderStatusCols2,
                   || SQLBindCol(m_hstmt, ++i,
SQL C TYPE TIMESTAMP, &m txn.OrderStatus.o entry d, 0, NULL) !=
                                                                       SQL IS POINTER) != SQL SUCCESS)
SQL SUCCESS
                                                                       ThrowError(CODBCERR::eSetStmtAttr);
                   \parallel SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT,
&m txn.OrderStatus.o carrier id, 0, NULL) != SQL SUCCESS
                    SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
                                                                                                              if ( SQLMoreResults(m_hstmt) ==
&m txn.OrderStatus.c balance, 0, NULL) != SQL SUCCESS
                                                                       SQL ERROR)
                   SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.OrderStatus.o_id, 0, NULL) != SQL_SUCCESS
                                                                       ThrowError(CODBCERR::eMoreResults);
                   ThrowError(CODBCERR::eBindCol);
                                                                                                              if ( (rc = SQLFetch(m hstmt)) ==
                                                                       SQL ERROR)
void CTPCC ODBC::OrderStatus()
                                                                       ThrowError(CODBCERR::eFetch);
```

```
SQLFreeStmt(m_hstmt, SQL_CLOSE);
                                                                                           try
                             if (m txn.OrderStatus.o ol cnt == 0)
                                       throw new CTPCC_ODBC_ERR(
                                                                                                    rc = SQLExecDirectW(m hstmt,
CTPCC_ODBC_ERR::ERR NO SUCH ORDER ):
                                                                       (SQLWCHAR*)L"{call tpcc_delivery(?,?)}", SQL_NTS);
                             else if (m txn.OrderStatus.c id == 0 &&
                                                                                                    if (rc != SQL SUCCESS && rc !=
m txn.OrderStatus.c last[0] == 0
                                                                       SQL SUCCESS WITH INFO)
                                       throw new CTPCC ODBC ERR(
                                                                       ThrowError(CODBCERR::eExecDirect);
CTPCC ODBC ERR::ERR INVALID CUST );
                                                                                                    if ( SQLFetch(m_hstmt) == SQL_ERROR )
m_txn.OrderStatus.exec_status_code = eOK;
                                                                       ThrowError(CODBCERR::eFetch);
                             break:
                                                                                                    SQLFreeStmt(m hstmt, SQL CLOSE);
                   catch (CODBCERR *e)
                                                                                                    m_txn.Delivery.exec_status_code = eOK;
                                                                                                    break;
                             if ((!e->m_bDeadLock) || (++iTryCount >
iMaxRetries))
                                                                                           catch (CODBCERR *e)
                                       throw;
                                                                                                    if ((!e->m_bDeadLock) || (++iTryCount >
                             // hit deadlock; backoff for increasingly longer
                                                                       iMaxRetries))
period
                                                                                                              throw;
                             delete e:
                             Sleep(10 * iTryCount);
                                                                                                    // hit deadlock; backoff for increasingly longer
                                                                       period
                   }
                                                                                                    delete e;
                                                                                                    Sleep(10 * iTryCount);
         if (iTryCount)
                   throw new
CTPCC ODBC ERR(CTPCC ODBC ERR::ERR RETRIED TRANS,
iTryCount);
                                                                                 if (iTryCount)
                                                                                           throw new
                                                                       CTPCC ODBC ERR(CTPCC ODBC ERR::ERR RETRIED TRANS,
void CTPCC_ODBC::InitDeliveryParams()
                                                                       iTryCount);
         if ( SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc,
&m hstmtDelivery) != SQL SUCCESS)
                   ThrowError(CODBCERR::eAllocHandle);
                                                                       tpcc odbc.h
         m hstmt = m hstmtDelivery;
                                                                                 FILE:
                                                                                                    TPCC ODBC.H
                                                                                                              Microsoft TPC-C Kit Ver.
                                                                       4.20.000
         if ( SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
                                                                                                              Copyright Microsoft, 1999
SQL C SSHORT, SQL SMALLINT, 0, 0, &m txn.Delivery.w id, 0, NULL)
                                                                                All Rights Reserved
!= SQL_SUCCESS
                   || SQLBindParameter(m hstmt, ++i,
                                                                                                              Version 4.10.000 audited by
SQL_PARAM_INPUT, SQL_C_SSHORT, SQL_SMALLINT, 0, 0,
                                                                       Richard Gimarc, Performance Metrics, 3/17/99
&m_txn.Delivery.o_carrier_id, 0, NULL) != SQL_SUCCESS
                                                                                 PURPOSE:
                                                                                                    Header file for TPC-C txn class
                   ThrowError(CODBCERR::eBindParam);
                                                                       implementation.
         for (i=0;i<10;i++)
                                                                          Change history:
                                                                                           4.20.000 - updated rev number to match kit
                   if ( SQLBindCol(m_hstmt, (UWORD)(i+1),
SQL_C_SLONG, &m_txn.Delivery.o_id[i], 0, NULL) != SQL_SUCCESS)
                                                                       #pragma once
                             ThrowError(CODBCERR::eBindCol);
         }
                                                                       // need to declare functions for import, unless define has already been created
                                                                       // by the DLL's .cpp module for export.
                                                                       #ifndef DllDecl
void CTPCC_ODBC::Delivery()
                                                                       #define DllDecl declspec( dllimport )
                                                                       #endif
         RETCODE
                                       rc;
                                       iTryCount = 0;
                                                                       class CODBCERR: public CBaseErr
         m hstmt = m hstmtDelivery;
                                                                                 public:
                                                                                           enum ACTION
         while (TRUE)
```

```
ERR_NO_SUCH_ORDER,
                             eNone,
                             eUnknown,
                                                                          "No orders found for customer."
                                                                                                      ERR RETRIED TRANS.
                             eAllocConn,
                                                                     //
error from SQLAllocConnect
                                                                         // "Retries before transaction succeeded."
                             eAllocHandle,
                                                           // error from
SQLAllocHandle
                             eConnOption,
                                                           // error from
                                                                                            CTPCC ODBC ERR( int iErr ) { m errno = iErr;
SQLSetConnectOption
                                                                        m iTryCount = 0; };
                             eConnect,
                                                           // error from
                                                                                            CTPCC ODBC ERR( int iErr, int iTryCount ) {
SQLConnect
                                                                        m_errno = iErr; m_iTryCount = iTryCount; };
                             eAllocStmt,
                                                                     //
error from SQLAllocStmt
                             eExecDirect,
                                                           // error from
                                                                                            int
                                                                                                                m errno;
SQLExecDirect
                                                                                                                m_iTryCount;
                                                                                            int
                             eBindParam,
                                                                     //
error from SQLBindParameter
                                                                                            int ErrorType() {return ERR TYPE TPCC ODBC;};
                             eBindCol,
                                                           // error from
                                                                                            int ErrorNum() {return m errno;};
SQLBindCol
                             eFetch,
                                                                                            char *ErrorText();
error from SQLFetch
                             eFetchScroll,
                                                           // error from
SQLFetchScroll
                                                                        class DllDecl CTPCC ODBC: public CTPCC BASE
                             eMoreResults,
                                                           // error from
SQLMoreResults
                                                                                  private:
                             ePrepare,
                                                           // error from
                                                                                            // declare variables and private functions here...
                                                                                            BOOL
                                                                                                                m bDeadlock;
                                                                                                                                             //
SQLPrepare
                             eExecute,
                                                           // error from
                                                                        transaction was selected as deadlock victim
SQLExecute
                                                                                                                          m_MaxRetries;
                                                                                            int
                             eSetEnvAttr,
                                                           // error from
                                                                        // retry count on deadlock
SQLSetEnvAttr
                             eSetStmtAttr
                                                           // error from
                                                                                            SQLHENV
                                                                                                                          m henv;
SQLSetStmtAttr
                                                                                  // ODBC environment handle
                                                                                            SOLHDBC
                                                                                                                          m_hdbc;
                   };
                                                                                            SQLHSTMT
                                                                                                                m hstmt;
                                                                                                                                             //
                   CODBCERR(void)
                                                                        the current hstmt
                             m_eAction = eNone;
                                                                                            SQLHSTMT
                                                                                                                m_hstmtNewOrder;
                             m NativeError = 0;
                                                                                                                m hstmtPayment;
                                                                                            SQLHSTMT
                             m_bDeadLock = FALSE;
                                                                                            SQLHSTMT
                                                                                                                m_hstmtDelivery;
                             m odbcerrstr = NULL;
                                                                                            SQLHSTMT
                                                                                                                m hstmtOrderStatus;
                                                                                            SQLHSTMT
                                                                                                                m hstmtStockLevel;
                   };
                   ~CODBCERR()
                                                                                            SQLHDESC
                                                                                                                m descNewOrderCols1;
                                                                                            SQLHDESC
                                                                                                                m descNewOrderCols2;
                             if (m odbcerrstr!= NULL)
                                                                                            SQLHDESC
                                                                                                                m descOrderStatusCols1;
                                       delete [] m_odbcerrstr;
                                                                                            SQLHDESC
                                                                                                                m_descOrderStatusCols2;
                   };
                                                                                            // new-order specific fields
                   ACTION m_eAction;
                                                                                            SQLUINTEGER
                                                                                                                m BindOffset;
                                       m NativeError;
                                                                                            SQLUINTEGER
                                                                                                                m RowsFetched;
                   BOOL
                             m bDeadLock;
                                                                                                                          m_no_commit_flag;
                   char *m odbcerrstr;
                                                                                            void ThrowError( CODBCERR::ACTION eAction );
                   int ErrorType() {return ERR TYPE ODBC;};
                                                                                            void InitNewOrderParams();
                   int ErrorNum() {return m_NativeError;};
                   char *ErrorText() {return m_odbcerrstr;};
                                                                                            void InitPaymentParams();
                                                                                            void InitDeliveryParams();
};
                                                                                            void InitStockLevelParams();
                                                                                            void InitOrderStatusParams();
class CTPCC_ODBC_ERR: public CBaseErr
                                                                                            union
          public:
                   enum TPCC_ODBC_ERRS
                                                                                                      NEW_ORDER_DATA
                                                                        NewOrder;
                             ERR_WRONG_SP_VERSION = 1,
                                                                     //
                                                                                                      PAYMENT_DATA
                                                                                                                                   Payment;
"Wrong version of stored procs on database server"
                                                                                                      DELIVERY DATA
                                                                                                                                   Delivery;
                             ERR_INVALID_CUST,
                                                                                                      STOCK_LEVEL_DATA
                                                                                                                                   StockLevel;
// "Invalid Customer id,name."
                                                                                                      ORDER STATUS DATA
                                                                                                                                   OrderStatus;
```

```
}
                                                                           #include <atmi.h>
                                                   m_txn;
          public:
                                                                           #ifdef ICECAP
                    CTPCC_ODBC(LPCSTR szServer, LPCSTR szUser,
                                                                           // for IceCAP profiling
LPCSTR szPassword, LPCSTR szHost, LPCSTR szDatabase);
                                                                           #include <icapexp.h>
                    ~CTPCC ODBC(void);
                                                                           #endif
                    inline PNEW_ORDER_DATA
                                                                            // need to declare functions for export
BuffAddr NewOrder()
                                         { return &m_txn.NewOrder; };
                                                                           #define DllDecl __declspec( dllexport )
                    inline PPAYMENT DATA
BuffAddr_Payment()
                               { return &m_txn.Payment; };
                                                                           #include "..\..\common\src\trans.h"
                                                                                                                               //tpckit transaction
                    inline PDELIVERY_DATA
                                                                           header contains definations of structures specific to TPC-C
                                                                           #include "..\..\common\src\error.h"
BuffAddr Delivery()
                               { return &m txn.Delivery; };
                    inline PSTOCK_LEVEL_DATA BuffAddr_StockLevel()
                                                                           #include "..\..\common\src\txn_base.h"
                                                                           #include "tpcc tux.h"
{ return &m_txn.StockLevel; };
                                                                                                                                         // interface
                                                                           to Tuxedo libraries
                    inline PORDER STATUS DATA
                              { return &m txn.OrderStatus; };
BuffAddr OrderStatus()
                                                                           static TPINIT
                                                                                                                               *tpinf;
                    void NewOrder
                                                                           static DWORD
                                                                                                                               TLSIsTpInitedKey;
                                                   ();
                    void Payment
                                                                           static CRITICAL SECTION
                                                                                                                     TpCriticalSection;
                                                   ();
                    void Delivery
                                                   ();
                    void StockLevel
                                                   ():
                    void OrderStatus
                                         ();
                                                                           BOOL APIENTRY DllMain(HMODULE hModule, DWORD
                                                                           ul reason for call, LPVOID lpReserved)
};
                                                                                      switch( ul_reason_for_call )
                                                                                                case DLL_PROCESS_ATTACH:
// wrapper routine for class constructor
extern "C" DllDecl CTPCC ODBC* CTPCC ODBC new
                                                                                                          DisableThreadLibraryCalls(hModule);
          ( LPCSTR szServer, LPCSTR szUser, LPCSTR szPassword,
LPCSTR szHost, LPCSTR szDatabase );
                                                                                                          // create thread local storage to determine
                                                                           Tuxedo initialization per thread.
typedef CTPCC ODBC* (TYPE CTPCC ODBC)(LPCSTR, LPCSTR,
                                                                                                          // it really should be possible to do this in the
LPCSTR, LPCSTR, LPCSTR);
                                                                           DLL THREAD ATTACH call, but
                                                                                                          // Ed says he could not get it to work.
                                                                                                          // assumption:value init'd to 0
                                                                                                          TLSIsTpInitedKey = TlsAlloc();
tpcc tux.cpp
                                                                                                          if ((tpinf = (TPINIT *)tpalloc("TPINIT",
          FILE:
                              TPCC TUX.CPP
                                                                           NULL, sizeof(TPINIT))) == NULL)
                                         Microsoft TPC-C Kit Ver.
4.20.000
                                                                                                                    // int TpRc = tperrno;
                                         Copyright Microsoft, 1999
                                                                                                                    return FALSE;
         All Rights Reserved
                                                                                                          tpinf->flags |= TPMULTICONTEXTS;
                                         Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
                                                                                                          InitializeCriticalSection(&TpCriticalSection);
                                                                                                          break;
                              Implementation for TPC-C Tuxedo class.
          Contact:
                    Charles Levine (clevine@microsoft.com)
                                                                                                case DLL PROCESS DETACH:
                                                                                                          TlsFree(TLSIsTpInitedKey);
  Change history:
                                                                                                          DeleteCriticalSection(&TpCriticalSection);
                    4.20.000 - updated rev number to match kit
                                                                                                          break:
                                                                                                default:
#include <windows.h>
                                                                                                          /* nothing */;
#include cess.h>
#include <stdio.h>
                                                                                     return TRUE;
#include <stdarg.h>
#include <malloc.h>
#include <stdlib.h>
                                                                           static void ThrTpInit()
#include <string.h>
#include <time.h>
                                                                                      static int num_tpinits=0;
#include <sys\timeb.h>
                                                                                      int iRc, TpRc;
#include <io.h>
#include <assert.h>
                                                                                      // has this thread been initialized? check thread local storage
                                                                                      if(!TlsGetValue(TLSIsTpInitedKey))
#include <tmenv.h>
#include <xa.h>
```

```
EnterCriticalSection(&TpCriticalSection);
                    itoa(++num tpinits, tpinf->cltname, 10);
                    iRc = tpinit(tpinf);
                    TpRc = tperrno;
                    LeaveCriticalSection(&TpCriticalSection);
                    if (iRc < 0)
                              throw new CTUXERR( tperrno );
                    int value = 1;
                    TlsSetValue(TLSIsTpInitedKey,&value);
          }
// wrapper routine for class constructor
  declspec(dllexport) CTPCC TUXEDO* CTPCC TUXEDO new()
          return new CTPCC_TUXEDO();
}
CTPCC TUXEDO::CTPCC TUXEDO()
                    Add initialization of Tuxedo Structures
          m_txn = (TUX_DATA *)tpalloc("CARRAY", NULL,
sizeof(TUX DATA));
          if (m txn == NULL)
                    throw new CTUXERR( tperrno );
}
CTPCC TUXEDO::~CTPCC TUXEDO()
          // free the data structure allocated with tpalloc
          tpfree((char *)m txn);
void CTPCC_TUXEDO::NewOrder()
                    ilen, *olen;
          long
          ThrTpInit();
          ilen = sizeof(TUX DATA);
          olen = &ilen;
          if (tpcall("NEWORDER", (char *)m_txn, ilen, (char **)&m_txn,
(long *)olen, TPSIGRSTRT) == -1)
                    throw new CTUXERR( tperrno );
          if ( m txn->ErrorType != ERR SUCCESS )
                    throw new CTUXERR( m_txn->ErrorType, m_txn->error
);
void CTPCC_TUXEDO::Payment()
                    ilen, *olen;
          long
          ThrTpInit();
          ilen = sizeof(TUX DATA);
          olen = &ilen;
          if (tpcall("PAYMENT", (char *)m_txn, ilen, (char **)&m_txn, (long
*)olen, TPSIGRSTRT) == -1)
                    throw new CTUXERR( tperrno );
          if ( m txn->ErrorType != ERR SUCCESS )
```

```
throw new CTUXERR( m_txn->ErrorType, m_txn->error
void CTPCC_TUXEDO::Delivery()
          int
                               iRc;
          long
                    ilen, *olen;
          // Note: Delivery txn code in the tuxedo server does not implement
logging of the delivery
               txn results, so cannot be used as is to run an auditable TPC-C
         //
result. For that
               reason, delivery txns should not be done via tuxedo.
          //
               The code is included for completeness.
          m_txn->u.Delivery.exec_status_code = eDeliveryFailed;
          return;
          // normal path...
          ThrTpInit();
          GetLocalTime(&m txn->u.Delivery.queue time);
          ilen = sizeof(TUX_DATA);
          olen = &ilen;
          if ((iRc = tpacall("DELIVERY", (char *)m_txn, ilen,
TPNOREPLY) = -1
                    int TpRc = tperrno;
                    m_txn->u.Delivery.exec_status_code = eDeliveryFailed;
          else
                    m_txn->u.Delivery.exec_status_code = eOK;
void CTPCC_TUXEDO::StockLevel()
          long
                    ilen, *olen;
          ThrTpInit();
          ilen = sizeof(TUX DATA);
          olen = &ilen;
          if (tpcall("STOCKLEVEL", (char *)m txn, ilen, (char **)&m txn,
(long *)olen, TPSIGRSTRT) == -1)
                    throw new CTUXERR( tperrno );
          if ( m txn->ErrorType != ERR SUCCESS )
                    throw new CTUXERR( m_txn->ErrorType, m_txn->error
void CTPCC TUXEDO::OrderStatus()
          long
                    ilen, *olen;
          ThrTpInit();
          ilen = sizeof(TUX DATA);
          olen = \&ilen;
          if (tpcall("ORDERSTATUS", (char *)m_txn, ilen, (char **)&m_txn,
(long *)olen, TPSIGRSTRT) == -1)
                    throw new CTUXERR( tperrno );
```

```
STOCK_LEVEL_DATA
          if ( m txn->ErrorType != ERR SUCCESS )
                                                                           StockLevel;
                    throw new CTUXERR( m txn->ErrorType, m txn->error
                                                                                                                    ORDER STATUS DATA
                                                                           OrderStatus;
);
}
                                                                                                          } u;
                                                                                               } *m txn;
char *CTUXERR::ErrorText()
                                                                                     public:
          if (m_iErrorType == 0)
                                                                                               CTPCC TUXEDO();
                                                                                               ~CTPCC_TUXEDO(void);
                    if (m_errno == TPEOS)
                              sprintf( m_szErrorText, "Error: TUXEDO
                                                                                               inline PNEW ORDER DATA
error # %d, OS error # %d", m errno, m iError );
                                                                           BuffAddr NewOrder()
                                                                                                                    { return &m txn->u.NewOrder;
                    else
                              sprintf( m_szErrorText, "Error: TUXEDO
                                                                                               inline PPAYMENT DATA
error # %d", m_errno );
                                                                                                          { return &m_txn->u.Payment; };
                                                                           BuffAddr_Payment()
                                                                                               inline PDELIVERY_DATA
          else
                                                                           BuffAddr_Delivery()
                                                                                                          { return &m_txn->u.Delivery; };
                    sprintf( m_szErrorText, "Error: Class %d, error # %d",
                                                                                               inline PSTOCK_LEVEL_DATA BuffAddr_StockLevel()
m iErrorType, m iError);
                                                                           { return &m txn->u.StockLevel; };
                                                                                               inline PORDER_STATUS_DATA
          return m_szErrorText;
                                                                           BuffAddr OrderStatus()
                                                                                                          { return &m txn->u.OrderStatus; };
};
                                                                                               void NewOrder
                                                                                                                              ();
                                                                                               void Payment
                                                                                                                              ();
tpcc tux.h
                                                                                               void Delivery
                                                                                                                              ();
                                                                                               void StockLevel
                                                                                                                              ();
          FILE:
                              TPCC_TUX.H
                                                                                               void OrderStatus
                                                                                                                    ();
                                         Microsoft TPC-C Kit Ver.
4.20.000
                                         Copyright Microsoft, 1999
          All Rights Reserved
                                                                           class CTUXERR: public CBaseErr
                                         Version 4.10.000 audited by
                                                                                     private:
Richard Gimarc, Performance Metrics, 3/17/99
                                                                                               // TODO: should use the sz Msg field of the base class
          PURPOSE:
                              Header file for TPC-C Tuxedo class
                                                                           instead
implementation.
                                                                                               char m szErrorText[64];
  Change history:
                                                                                     public:
                    4.20.000 - updated rev number to match kit
                                                                                               // use this interface for genuine Tuxedo errors
                                                                                               CTUXERR( int iErr )
#pragma once
                                                                                                          m_errno = iErr;
                                                                                                          m iErrorType = 0;
// need to declare functions for import, unless define has already been created
                                                                                                          m_iError = GetLastError();
                                                                                                                                        // only
// by the DLL's .cpp module for export.
                                                                           meaningful if m_errno == TPEOS
#ifndef DllDecl
                                                                                               };
#define DllDecl declspec( dllimport )
#endif
                                                                                               // use this interface to impersonate a non-Tuxedo error
                                                                           type
class DllDecl CTPCC_TUXEDO: public CTPCC_BASE
                                                                                               CTUXERR( int iErrorType, int iError )
          private:
                                                                                                          m iErrorType = iErrorType;
                    struct TUX_DATA
                                                                                                          m iError = iError;
                                                                                                          m = 0;
                              int
ErrorType;
                              int
                                                                                                                    m errno;
                                                                                               int
error;
                                                                                               int
                                                                                                                    m_iErrorType;
                                                                                                                    m iError;
                                                                                               int
                              union
                                                                                               // A CTUXERR class can impersonate another class,
                                         NEW ORDER DATA
                                                                           which happens if the error
NewOrder;
                                                                                               // was not actually a Tuxedo error, but was simply
                                         PAYMENT_DATA
                                                                           transmitted back via Tuxedo.
Payment;
                                                                                               int ErrorType()
                                         DELIVERY_DATA
Delivery;
```

```
if (m_iErrorType == 0)
                                                                        // when compiling with dblib, so redefined here. Note: we are using the symbol
                                       return ERR TYPE TUXEDO;
                                                                           SQLTYPES'
                             else
                                                                        // (declared in sqltypes.h) as a way to determine if TIMESTAMP STRUCT has
                                       return m_iErrorType;
                                                                        been declared.
                                                                        #ifndef __SQLTYPES
                   }
                                                                                  typedef struct
                   int ErrorNum() {return m errno;};
                   char *ErrorText();
                                                                                                     short
};
                                                                        SQLSMALLINT */ year;
                                                                                                     unsigned short
                                                                                                                         /* SQLUSMALLINT
// wrapper routine for class constructor
                                                                                  month;
extern "C" __declspec(dllexport) CTPCC_TUXEDO*
                                                                                                                         /* SQLUSMALLINT
                                                                                                     unsigned short
CTPCC TUXEDO new();
                                                                                  day;
                                                                                                     unsigned short
                                                                                                                         /* SQLUSMALLINT
                                                                                  hour;
typedef CTPCC TUXEDO* (TYPE CTPCC TUXEDO)();
                                                                                                     unsigned short
                                                                                                                         /* SQLUSMALLINT
                                                                                  minute:
                                                                                                     unsigned short
                                                                                                                         /* SQLUSMALLINT
trans.h
                                                                                  second:
                                                                                                     unsigned long
                                                                                                                         /* SQLUINTEGER */
                                                                        fraction:
          FILE:
                             TRANS.H
                                                                                  } TIMESTAMP STRUCT;
                                       Microsoft TPC-C Kit Ver.
                                                                        #endif
4.20.000
                                       Copyright Microsoft, 1999
                                                                        // possible values for exec_status_code after transaction completes
         All Rights Reserved
                                                                        enum EXEC_STATUS
                                       Version 4.10.000 audited by
                                                                                                               // 0
                                                                                  eOK,
                                                                                                                         "Transaction
Richard Gimarc, Performance Metrics, 3/17/99
                                                                        commited."
                                                                                  eInvalidItem,
                                                                                                     // 1
                                                                                                               "Item number is not valid."
          PURPOSE:
                             Header file for TPC-C structure templates.
                                                                                  eDeliveryFailed
                                                                                                     //2
                                                                                                               "Delivery Post Failed."
  Change history:
                    4.20.000 - updated rev number to match kit
                                                                        // transaction structures
                                                                        typedef struct
#pragma once
                                                                                  // input params
// String length constants
                                                                                  short
                                                                                                                         ol_supply_w_id;
#define SERVER_NAME_LEN
                                  20
                                                                                  long
                                                                                                                         ol_i_id;
#define DATABASE NAME LEN
                                                                                  short
                                                                                                                         ol_quantity;
#define USER NAME LEN
                                 20
#define PASSWORD LEN
                                20
                                                                                  // output params
#define TABLE_NAME_LEN
                                  20
                                                                                  char
#define I_DATA_LEN
                             50
                                                                        ol_i_name[I_NAME_LEN+1];
#define I NAME LEN
                              24
                                                                                  char
#define BRAND_LEN
                              1
                                                                        ol_brand_generic[BRAND_LEN+1];
#define LAST NAME LEN
                                 16
                                                                                  double
                                                                                                                         ol i price;
#define W NAME LEN
                               10
                                                                                  double
                                                                                                                         ol amount;
#define ADDRESS LEN
                               20
                                                                                                                         ol_stock;
                                                                                  short
#define STATE_LEN
                             2
                                                                        } OL_NEW_ORDER_DATA;
#define ZIP LEN
#define S DIST LEN
                            24
                                                                        typedef struct
#define S_DATA_LEN
                              50
#define D NAME LEN
                               10
                                                                                  // input params
#define FIRST NAME LEN
                                 16
                                                                                  short
                                                                                                     w_id;
#define MIDDLE NAME LEN
                                                                                  short
                                                                                                     d_id;
#define PHONE LEN
                             16
                                                                                  long
                                                                                                     c id;
#define DATETIME_LEN
                               30
                                                                                  short
                                                                                                     o_ol_cnt;
#define CREDIT LEN
#define C_DATA_LEN
                              250
                                                                                  // output params
#define H DATA LEN
                              24
                                                                                  EXEC STATUS
                                                                                                                         exec status_code;
#define DIST_INFO_LEN
                               24
                                                                                  char
                                                                                                     c last[LAST NAME LEN+1];
#define MAX_OL_NEW_ORDER_ITEMS
                                                                                                     c_credit[CREDIT_LEN+1];
                                                                                  char
#define MAX_OL_ORDER_STATUS_ITEMS 15
                                                                                  double
                                                                                                     c_discount;
#define STATUS LEN
                              25
                                                                                  double
                                                                                                     w_tax;
#define OL DIST INFO LEN
                                         24
                                                                                  double
                                                                                                     d tax;
                                                                                  long
                                                                                                               o_id;
// TIMESTAMP STRUCT is provided by the ODBC header file sqltypes.h, but
                                                                                  short
                                                                                                                         o_commit_flag;
is not available
```

```
TIMESTAMP_STRUCT
                                      o_entry_d;
                                                                                 long
                                                                                              o id:
         short
                             o_all_local;
                                                                                 TIMESTAMP STRUCT
                                                                                                               o_entry_d;
         double
                             total amount;
                                                                                              o carrier id;
                                                                                 short
         OL NEW ORDER DATA
                                                                                 OL_ORDER_STATUS_DATA
OL[MAX OL NEW ORDER ITEMS];
                                                                       OL[MAX_OL_ORDER_STATUS_ITEMS];
NEW ORDER DATA, *PNEW ORDER DATA;
                                                                                 short
                                                                                              o ol cnt;
                                                                        ORDER STATUS DATA, *PORDER STATUS DATA;
typedef struct
         // input params
                                                                       typedef struct
         short
                                       w id;
         short
                                       d_id;
                                                                                 // input params
                                                                                                     w_id;
         long
                                       c_id;
                                                                                 short
         short
                                       c d id;
                                                                                 short
                                                                                                     o carrier id;
         short
                                       c_w_id;
         double
                                       h amount;
                                                                                 // output params
                             c\_last[LAST\_NAME\_LEN+1];
         char
                                                                                 EXEC STATUS
                                                                                                                        exec_status_code;
                                                                                 SYSTEMTIME
                                                                                                              queue_time;
         // output params
                                                                                                                        o_id[10];
                                                                                                                                            //
         EXEC STATUS
                                                                       id's of delivered orders for districts 1 to 10
                                                 exec_status_code;
         TIMESTAMP STRUCT
                                                                        } DELIVERY DATA, *PDELIVERY DATA;
         char
                                       w_street_1[ADDRESS_LEN+1];
                                       w street 2[ADDRESS LEN+1];
                                                                       //This structure is used for posting delivery transactions and for writing them to
         char
         char
                                       w_city[ADDRESS_LEN+1];
                                                                       the delivery server.
                                       w state[STATE LEN+1];
                                                                       typedef struct DELIVERY TRANSACTION
         char
         char
                                       w_zip[ZIP_LEN+1];
                                       d_street_1[ADDRESS_LEN+1];
                                                                                 SYSTEMTIME
                                                                                                                                  //time
         char
                                                                                                     queue;
         char
                                       d street 2[ADDRESS LEN+1];
                                                                       delivery transaction queued
                                       d_city[ADDRESS_LEN+1];
         char
                                                                                                     w_id;
                                                                                                                                  //delivery
                                                                                 short
         char
                                       d state[STATE LEN+1];
                                                                       warehouse
                               d_zip[ZIP_LEN+1];
         char
                                                                                 short
                                                                                                     o_carrier_id;
                                                                                                                        //carrier id
         char
                                       c first[FIRST NAME LEN+1];
                                                                        } DELIVERY_TRANSACTION;
                                       c_middle[MIDDLE_NAME_LEN
         char
+ 1];
                                                                       typedef struct
                                       c street 1[ADDRESS LEN+1];
                                                                                 // input params
                                       c_street_2[ADDRESS_LEN+1];
                                                                                 short
                                                                                                                        w_id;
         char
                                       c city[ADDRESS LEN+1];
                                                                                                                        d id;
         char
                                                                                 short
                                       c_state[STATE_LEN+1];
         char
                                                                                 short
                                                                                                                        threshold;
                                       c_zip[ZIP_LEN+1];
         char
                                       c_phone[PHONE_LEN+1];
         char
                                                                                 // output params
         TIMESTAMP_STRUCT
                                       c_since;
                                                                                 EXEC_STATUS
                                                                                                                        exec_status_code;
                                       c credit[CREDIT LEN+1];
                                                                                 long
                                                                                                                        low stock;
                                                                        } STOCK_LEVEL_DATA, *PSTOCK_LEVEL_DATA;
         double
                                       c_credit_lim;
         double
                                       c discount;
         double
                                       c balance;
         char
                                       c data[200+1];
                                                                        tuxapp.cpp
} PAYMENT_DATA, *PPAYMENT_DATA;
                                                                                                     TUXAPP.CPP
                                                                                 FILE:
typedef struct
                                                                                                              Microsoft TPC-C Kit Ver.
                                                                       4.20.000
         long
                                       ol i id;
                                                                                                              Copyright Microsoft, 1999
         short
                                       ol_supply_w_id;
                                                                                 All Rights Reserved
         short
                                       ol quantity;
         double
                                       ol_amount;
                                                                                                               Version 4.10.000 audited by
         TIMESTAMP STRUCT
                                       ol delivery d;
                                                                       Richard Gimarc, Performance Metrics, 3/17/99
} OL_ORDER_STATUS_DATA;
                                                                                 PURPOSE:
                                                                                                     Implementation for TPC-C Tuxedo server.
typedef struct
                                                                                 Contact:
                                                                                         Charles Levine (clevine@microsoft.com)
         // input params
         short
                      w id;
                                                                          Change history:
         short
                      d_id;
                                                                                           4.20.000 - updated rev number to match kit
                      c_id;
         long
         char
                      c_last[LAST_NAME_LEN+1];
                                                                       #include <windows.h>
         // output params
                                                                       #include cess.h>
         EXEC_STATUS
                                                 exec_status_code;
                                                                       #include <tchar.h>
         char
                      c first[FIRST NAME LEN+1];
                                                                       #include <stdio.h>
                      c_middle[MIDDLE_NAME_LEN+1];
         char
                                                                       #include <stdarg.h>
         double
                       c_balance;
                                                                       #include <iostream.h>
```

```
#include <malloc.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
#include <sys\timeb.h>
#include <io.h>
#include <assert.h>
#include <sqltypes.h>
#include <sql.h>
#include <sqlext.h>
#include <tmenv.h>
#include <xa h>
#include <atmi.h>
#include "..\..\common\src\trans.h"
                                                   //tpckit transaction
header contains definations of structures specific to TPC-C
#include "..\..\common\src\error.h"
#include "..\..\common\src\txn base.h"
#include "..\..\common\src\ReadRegistry.h"
#include "..\..\db dblib dll\src\tpcc dblib.h"
                                                   // DBLIB
implementation of TPC-C txns
                                                                            */
#include "..\..\db odbc dll\src\tpcc odbc.h"
                                                   // ODBC
implementation of TPC-C txns
#include "tuxapp.h"
          szMyComputerName[MAX_COMPUTERNAME_LENGTH+1];
char
// configuration settings from registry
TPCCREGISTRYDATA
                                         Reg;
CTPCC_BASE
                              *pTxn = NULL;
#include "..\..\common\src\ReadRegistry.cpp"
/* FUNCTION: tpsvrinit ( int argc, char *argv[])
* PURPOSE:
                    Initialize the Server to Database connection.
* RETURNS:
                              int
                                                   Success
                                                             Failure
int tpsvrinit ( int argc, char *argv[] )
          try
                    DWORD dwSize =
MAX COMPUTERNAME LENGTH+1;
                    GetComputerName(szMyComputerName, &dwSize);
                    szMyComputerName[dwSize] = 0;
                    if ( ReadTPCCRegistrySettings( &Reg ) )
                              throw new CTUXAPP_ERR(
ERR MISSING REGISTRY ENTRIES);
                    GetParameters(argc, argv);
                    switch (Reg.eDB_Protocol)
                    case ODBC:
                              pTxn = new CTPCC_ODBC(
Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword, szMyComputerName,
Reg.szDbName);
                              break:
                    case DBLIB:
```

```
pTxn = new CTPCC DBLIB(
Reg.szDbServer,\,Reg.szDbUser,\,Reg.szDbPassword,\,szMyComputerName,\,
Reg.szDbName);
                                break;
           }
           catch (CBaseErr *e)
                     WriteMessageToEventLog(e->ErrorText());
                     delete e;
          catch (...)
                     WriteMessageToEventLog(TEXT("Unhandled
exception."));
           return 0;
/* FUNCTION: tpsvrdone ( void )
void tpsvrdone (void)
           delete pTxn;
          pTxn = NULL;
/* FUNCTION: BOOL GetParameters(int argc, char *argv[])
* PURPOSE:
                     This function parses the command line passed in to the
delivery executable, initializing
                                and filling in global variable parameters.
* ARGUMENTS:
                    int
                                           argc
                                                      number of command
line arguments passed to delivery
                                           char
                                                      *argv[]
                                                                array of
command line argument pointers
static void GetParameters(int argc, char *argv[])
           // advance through args until "--" is found
           for(int j=0; j<argc; j++)
                     if (strcmp(argv[j],"--") == 0)
           for(int i=j+1; i<argc; i++)
                     if ( argv[i][0] == '-' || argv[i][0] == '/' )
                                switch(argv[i][1])
                                           case 'S':
                                                      strcpy(Reg.szDbServer,
argv[i]+2);
                                                      break;
                                           case 'D':
                                                      strcpy(Reg.szDbName,
argv[i]+2);
                                                      break;
                                           case 'P':
```

```
strcpy(Reg.szDbPassword, argv[i]+2);
                                                   break:
                                         case 'U':
                                                   strcpy(Reg.szDbUser,
argv[i]+2);
                                                   break;
                                         default:
                                                   cout << "Microsoft
TPC-C Kit" << endl;
                                                   cout << "Tuxedo
Server" << endl << endl:
                                                   cout << "Usage:" <<
endl;
                                                   cout << " tuxapp
[<tuxedo-args>] -- -S<sql-server> [-D<database>] [-U<user>] [-P<password>]"
<< endl << endl;
                                                   cout << "All parameters
default to values in registry." << endl;
                                                   throw new
CTUXAPP_ERR( ERR_BAD_SYNTAX );
static void WriteMessageToEventLog(LPTSTR lpszMsg)
  TCHAR szMsg[256];
  HANDLE hEventSource;
  LPTSTR lpszStrings[2];
  // Use event logging to log the error.
  hEventSource = RegisterEventSource(NULL, TEXT("TUXAPP.EXE"));
   _stprintf(szMsg, TEXT("Error in TUXAPP.EXE: "));
  lpszStrings[0] = szMsg;
  lpszStrings[1] = lpszMsg;
  if (hEventSource != NULL)
    ReportEvent(hEventSource, // handle of event source
      EVENTLOG_ERROR_TYPE, // event type
                   // event category
      0,
                   // event ID
      0,
      NULL,
                       // current user's SID
                   // strings in lpszStrings
                   // no bytes of raw data
      (LPCTSTR *)lpszStrings, // array of error strings
      NULL);
                       // no raw data
    (VOID) DeregisterEventSource(hEventSource);
void NEWORDER( TPSVCINFO *rqst )
          PNEW ORDER DATA
                                         pNewOrder;
          TUX_DATA
                                         *pData;
          const int
                              iSize = sizeof(pData->u.NewOrder);
          try
                    pData = (TUX_DATA*)rqst->data;
                    pData->retval = ERR SUCCESS;
                    pData->error = 0;
```

```
pNewOrder = pTxn->BuffAddr NewOrder();
                    assert( rqst->len == sizeof(TUX DATA) );
                    memcpy(pNewOrder, &pData->u.NewOrder, iSize);
                   pTxn->NewOrder();
                   memcpy( &pData->u.NewOrder, pNewOrder, iSize );
                   tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX DATA), 0);
          catch (CBaseErr *e)
                    pData->retval = e->ErrorType();
                    pData->error = e->ErrorNum();
                   memcpy(&pData->u.NewOrder, pNewOrder, iSize);
                   tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX DATA), 0);
                   delete e;
          catch (...)
                    WriteMessageToEventLog(TEXT("Unhandled
exception."));
                    pData->retval = ERR TYPE LOGIC;
                   pData - > error = 0;
                    memcpy( &pData->u.NewOrder, pNewOrder, iSize );
                    tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX DATA), 0);
void PAYMENT( TPSVCINFO *rgst )
          PPAYMENT_DATA pPayment;
          TUX DATA
                                        *pData;
          const int
                              iSize = sizeof(pData->u.Payment);
          try
                    pData = (TUX_DATA*)rqst->data;
                   pData->retval = ERR_SUCCESS;
                    pData - > error = 0;
                   pPayment = pTxn->BuffAddr Payment();
                   assert( rqst->len == sizeof(TUX_DATA) );
                    memcpy(pPayment, &pData->u.Payment, iSize);
                   pTxn->Payment();
                   memcpy(&pData->u.Payment, pPayment, iSize);
                   tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX DATA), 0);
          catch (CBaseErr *e)
                   pData->retval = e->ErrorType();
                    pData - error = e - ErrorNum();
                   memcpy( &pData->u.Payment, pPayment, iSize );
                   tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX_DATA), 0);
                    delete e;
          catch (...)
                    WriteMessageToEventLog(TEXT("Unhandled
exception."));
                   pData->retval = ERR_TYPE_LOGIC;
                   pData - > error = 0;
                    memcpy( &pData->u.Payment, pPayment, iSize );
```

```
tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX_DATA), 0);
// Note: Delivery txn code below does not implement logging of the delivery
     txn results, so cannot be used as is to run an auditable TPC-C result.
     The code is included for completeness.
void DELIVERY( TPSVCINFO *rqst )
          PDELIVERY_DATA pDelivery;
          TUX DATA
                                         *pData;
          const int
                               iSize = sizeof(pData->u.Delivery);
          try
          {
                     pData = (TUX DATA*)rqst->data;
                    pData->retval = ERR_SUCCESS;
                    pData->error = 0;
                    pDelivery = pTxn->BuffAddr_Delivery();
                    assert( rqst->len == sizeof(TUX DATA) );
                    memcpy (pDelivery, \&pData->u.Delivery, iSize~);\\
                    pTxn->Delivery();
                    memcpy(&pData->u.Delivery, pDelivery, iSize);
                    tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX DATA), 0);
          catch (CBaseErr *e)
                    pData->retval = e->ErrorType();
                    pData->error = e->ErrorNum();
                    memcpy( &pData->u.Delivery, pDelivery, iSize );
                     tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX_DATA), 0);
                    delete e;
          catch (...)
          {
                     WriteMessageToEventLog(TEXT("Unhandled
exception."));
                     pData->retval = ERR_TYPE_LOGIC;
                    pData - > error = 0;
                    memcpy( &pData->u.Delivery, pDelivery, iSize );
                     tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX DATA), 0);
          }
void STOCKLEVEL( TPSVCINFO *rqst )
          PSTOCK LEVEL DATA
                                         pStockLevel;
          TUX DATA
                                                    *pData;
          const int
                                         iSize =
sizeof(pData->u.StockLevel);
          try
                    pData = (TUX DATA*)rgst->data;
                    pData->retval = ERR SUCCESS;
                    pData->error=0;
                    pStockLevel = pTxn->BuffAddr_StockLevel();
                    assert( rqst->len == sizeof(TUX DATA) );
                    memcpy(pStockLevel, &pData->u.StockLevel, iSize );
```

```
pTxn->StockLevel();
                    memcpy( &pData->u.StockLevel, pStockLevel, iSize );
                    tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX DATA), 0);
          catch (CBaseErr *e)
                    pData->retval = e->ErrorType();
                    pData->error = e->ErrorNum();
                    memcpy(&pData->u.StockLevel, pStockLevel, iSize);
                    tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX_DATA), 0);
                    delete e;
          catch (...)
                    WriteMessageToEventLog(TEXT("Unhandled
exception."));
                    pData->retval = ERR_TYPE_LOGIC;
                    pData - > error = 0;
                    memcpy( &pData->u.StockLevel, pStockLevel, iSize );
                    tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX DATA), 0);
          }
void ORDERSTATUS( TPSVCINFO *rqst )
          PORDER STATUS DATA
                                         pOrderStatus;
          TUX DATA
                                         *pData;
          const int iSize = sizeof(pData->u.OrderStatus);
          try
                    pData = (TUX_DATA*)rqst->data;
                    pData->retval = ERR SUCCESS;
                    pData - error = 0;
                    pOrderStatus = pTxn->BuffAddr_OrderStatus();
                    assert( rqst->len == sizeof(TUX DATA) );
                    memcpy(pOrderStatus, &pData->u.OrderStatus, iSize);
                    pTxn->OrderStatus();
                    memcpy( &pData->u.OrderStatus, pOrderStatus, iSize );
                    tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX_DATA), 0);
          catch (CBaseErr *e)
                    pData->retval = e->ErrorType();
                    pData->error = e->ErrorNum();
                    memcpy(&pData->u.OrderStatus, pOrderStatus, iSize);
                    tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX DATA), 0);
                    delete e;
          catch (...)
                    WriteMessageToEventLog(TEXT("Unhandled
exception."));
                    pData->retval = ERR TYPE LOGIC;
                    pData - > error = 0;
                    memcpy(&pData->u.OrderStatus, pOrderStatus, iSize);
                    tpreturn( TPSUCCESS, 0, rqst->data,
sizeof(TUX_DATA), 0);
          }
```

```
/* FUNCTION: CTUXAPP_ERR::ErrorText
                                                                                            int ErrorType() {return ERR_TYPE_TUXEDO;};
*/
                                                                                            int ErrorNum() {return m Error;};
                                                                                            char *ErrorText();
char* CTUXAPP_ERR::ErrorText(void)
                                                                        };
                                                                        struct TUX DATA
         int i;
         static SERRORMSG errorMsgs[] =
                                                                                  int
                                                                                                                                   retval;
                                                                                  int
                                                                                                                                   error:
                   { ERR_MISSING_REGISTRY_ENTRIES, "Required
entries missing from registry.
                                                                                  union
                   { ERR BAD SYNTAX,
                                                                                            NEW_ORDER_DATA
"Syntax error in input parameters."
                                                                                                                                   NewOrder;
                                                                                            PAYMENT DATA
                                                                                                                         Payment;
                   { ERR_UNKNOWN_DB_PROTOCOL,
                                                                                            DELIVERY DATA
                                                                                                                         Delivery;
"Unknown database protocol specified in registry."
                                                                                            STOCK LEVEL_DATA
                                                                                                                         StockLevel;
                                                                                            ORDER_STATUS_DATA
                                                                                                                         OrderStatus;
                                                                                  } u;
                                                           }
                                                                        };
          };
                                                                        static void GetParameters(int argc, char *argv[]);
          static char szNotFound[] = "Unknown error number.";
                                                                        static void WriteMessageToEventLog(LPTSTR lpszMsg);
          for(i=0; errorMsgs[i].szMsg[0]; i++)
                                                                        #if defined(__cplusplus)
                                                                        extern "C" {
                   if ( m Error == errorMsgs[i].iError )
                                                                        #endif
                             break:
                                                                        void NEWORDER( TPSVCINFO *rqst );
                                                                        void PAYMENT( TPSVCINFO *rqst );
          if ( !errorMsgs[i].szMsg[0] )
                   return szNotFound;
                                                                        void DELIVERY( TPSVCINFO *rqst );
                                                                        void STOCKLEVEL( TPSVCINFO *rqst );
          else
                   return errorMsgs[i].szMsg;
                                                                        void ORDERSTATUS( TPSVCINFO *rqst );
}
                                                                        #if defined(__cplusplus)
                                                                        #endif
tuxapp.h
         FILE:
                             TUXAPP.H
                                                                        tuxmain.c
                                       Microsoft TPC-C Kit Ver.
                                                                                                      TUXMAIN.C
                                       Copyright Microsoft, 1999
                                                                                  FILE:
         All Rights Reserved
                                                                        4.20.000
                                       Version 4.10.000 audited by
                                                                                 All Rights Reserved
         PURPOSE:
                             Header file for TPC-C Tuxedo server.
```

```
* Microsoft TPC-C Kit Ver.

4.20.000

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* Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99

* PURPOSE: Header file for TPC-C Tuxedo server.

* Change history:

* 4.20.000 - updated rev number to match kit

*/

enum TUXERROR

{

ERR_MISSING_REGISTRY_ENTRIES = 1,
ERR_BAD_SYNTAX,
ERR_UNKNOWN_DB_PROTOCOL

};

class CTUXAPP_ERR: public CBaseErr

{

public:
TUXERROR m_Error;

CTUXAPP_ERR(TUXERROR Err) {

m_Error =

Err; };
```

~CTUXAPP\_ERR() {};

```
Microsoft TPC-C Kit Ver.
                                         Copyright Microsoft, 1999
                                         Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
          PURPOSE:
                               Implementation for TPC-C Tuxedo server.
                    Charles Levine (clevine@microsoft.com)
          Contact:
   Change history:
                     4.20.000 - updated rev number to match kit
#include <stdio.h>
#include <xa.h>
#include <atmi.h>
#if defined( cplusplus)
extern "C" {
#endif
extern int _tmrunserver _((int));
extern void DELIVERY _((TPSVCINFO *));
extern void NEWORDER _((TPSVCINFO *));
extern void ORDERSTATUS _((TPSVCINFO *));
```

```
extern void PAYMENT ((TPSVCINFO *));
                                                                                    FILE:
                                                                                                        TXN BASE.H
extern void STOCKLEVEL ((TPSVCINFO *));
                                                                                                                  Microsoft TPC-C Kit Ver.
                                                                          4.20.000
#if defined(__cplusplus)
                                                                                                                  Copyright Microsoft, 1999
#endif
                                                                                    All Rights Reserved
static struct tmdsptchtbl_t _tmdsptchtbl[] = {
                                                                                                                  Version 4.10.000 audited by
          { "DELIVERY", "DELIVERY", (void (*) _((TPSVCINFO *)))
                                                                          Richard Gimarc, Performance Metrics, 3/17/99
DELIVERY, 0, 0 }
          { "NEWORDER", "NEWORDER", (void (*) ((TPSVCINFO *)))
                                                                                    PURPOSE:
                                                                                                        Header file for TPC-C txn class
                                                                          implementation.
NEWORDER, 1, 0 },
          { "ORDERSTATUS", "ORDERSTATUS", (void (*)
((TPSVCINFO *))) ORDERSTATUS, 2, 0 },
                                                                             Change history:
          { "PAYMENT", "PAYMENT", (void (*) _((TPSVCINFO *)))
                                                                                              4.20.000 - updated rev number to match kit
PAYMENT, 3, 0 },
           \{ \ "STOCKLEVEL", \ "STOCKLEVEL", \ (void\ (*)\ \_((TPSVCINFO
*))) STOCKLEVEL, 4, 0 },
                                                                          #pragma once
          { NULL, NULL, NULL, 0, 0 }
                                                                          // need to declare functions for import, unless define has already been created
                                                                          // by the DLL's .cpp module for export.
#ifndef _TMDLLIMPORT
                                                                          #ifndef DllDecl
#define _TMDLLIMPORT
                                                                          #define DllDecl declspec( dllimport )
#endif
                                                                          #endif
_TMDLLIMPORT extern struct xa_switch_t tmnull_switch;
                                                                          class DllDecl CTPCC_BASE
struct tmsvrargs t tmsvrargs = {
                                                                                    public:
          NULL,
                                                                                              CTPCC_BASE(void) {};
          & tmdsptchtbl[0],
                                                                                              virtual ~CTPCC BASE(void) {};
          tpsvrinit,
                                                                                              virtual PNEW ORDER DATA
          tpsvrdone,
                                                                          BuffAddr_NewOrder()
                                                                                              virtual PPAYMENT_DATA
                              /* PRIVATE */
          tmrunserver.
          NULL,
                                                                                                        = 0;
                                        /* RESERVED */
                                                                          BuffAddr Payment()
          NULL,
                                        /* RESERVED */
                                                                                              virtual PDELIVERY_DATA
          NULL,
                                        /* RESERVED */
                                                                          BuffAddr_Delivery()
                                        /* RESERVED */
                                                                                              virtual PSTOCK_LEVEL_DATA
          NULL
                                                                          BuffAddr StockLevel()
};
                                                                                                        = 0;
                                                                                              virtual PORDER_STATUS_DATA
struct tmsvrargs t*
                                                                          BuffAddr_OrderStatus()
                                                                                                        = 0:
#ifdef TMPROTOTYPES
                                                                                                                                      () = 0;
_tmgetsvrargs(void)
                                                                                              virtual void NewOrder
                                                                                              virtual void Payment
                                                                                                                            () = 0;
#else
                                                                                              virtual void Delivery
 _tmgetsvrargs()
                                                                                                                            () = 0;
                                                                                              virtual void StockLevel
#endif
                                                                                                                                      () = 0;
                                                                                              virtual void OrderStatus
                                                                                                                            () = 0:
          tmsvrargs.xa switch = &tmnull switch;
                                                                          };
          return(&tmsvrargs);
}
                                                                          txnlog.h
#ifdef TMPROTOTYPES
                                                                                    FILE:
                                                                                                        TXNLOG.H
main(int argc, char **argv)
                                                                                                                  Microsoft TPC-C Kit Ver.
#else
                                                                          4.10.000
main(argc,argv)
int argc;
                                                                                                                  NOTE: this file is RTE specific
char **argv;
                                                                          and should not be included
#endif
                                                                                                                  in Full Disclosure Reports.
#ifdef TMMAINEXIT
                                                                                                                  Copyright Microsoft, 1999
#include "mainexit.h"
#endif
                                                                                    PURPOSE:
                                                                                                        Structure definitions for logging delivery txn
                                                                          completion stats.
          return( _tmstartserver( argc, argv, _tmgetsvrargs()));
                                                                                    Contact: Charles Levine (clevine@microsoft.com)
txn base.h
                                                                            typedef struct _TXN_NEWORDER
```

```
BYTE
                  OL Count;
                                  //range 0 to 31
    BYTE
                  OL Remote Count; //range 0 to 31
    WORD
                  c_id;
    int
                  o id:
         } TXN NEWORDER;
 typedef struct _TXN_PAYMENT
    BYTE
                  CustByName;
    BYTE
                   IsRemote;
         TXN PAYMENT;
 typedef struct _TXN_ORDERSTATUS
                   BYTE
                            CustByName;
         } TXN ORDERSTATUS;
         typedef union _TXN_DETAILS
                  TXN NEWORDER NewOrder;
                   TXN PAYMENT
                                               Payment;
                  TXN ORDERSTATUS
                                               OrderStatus;
         } TXN DETAILS;
         // Common header for all records in txn log. The TxnType field is
         // a switch which identifies the particular variant.
         #define TXN REC TYPE CONTROL
                                                                 //
         #define TXN_REC_TYPE_TPCC
                                                                  2
// replaces TRANSACTION_TYPE_TPCC
         #define TXN_REC_TYPE_TPCC_DELIV_DEF
                                                        3
         typedef struct _TXN_RECORD_HEADER
                  JULIAN TIME
                                                                 //
                                      TxnStartT0;
start of txn
                   BYTE
                            TxnType;
                                                        // one of
TXN_REC_TYPE_*
                            TxnSubType;
depends on TxnType
         TXN RECORD HEADER, *PTXN RECORD HEADER;
         typedef struct _TXN_RECORD_CONTROL
                  // common header; must exactly match
TXN_RECORD_HEADER
                  JULIAN TIME
                                      TxnStartT0;
                                                                  //
start of txn
                            TxnType;
                  BYTE
                                                        // =
TXN_REC_TYPE_CONTROL
                   BYTE
                            TxnSubType;
                                                                  //
depends on TxnType
                  // end of common header
                                                                  //
                  DWORD Len:
number of bytes after this field
         } TXN_RECORD_CONTROL, *PTXN_RECORD_CONTROL;
         // TPC-C Txn Record Layout:
 //'TxnStartT0' is a Julian timestamp corresponding to the moment the
 //txn is sent to the SUT, i.e., beginning of response time. Deltas
 //are in milliseconds. Note that if RTDelay > 0, then the txn was
 //delayed by this amount. The delay occurs at the beginning of the
```

```
//response time. So if RTDelay > 0, then the txn was actually sent
  //at TxnStartT0 + RTDelay.
  //Graphically:
  // time -->
  //
  //
      |--- Menu --- |-- Keying -- |-- Response -- |--- Think -- |
      <- DeltaT1 -> <- DeltaT2 -> <- DeltaT4 -> <- DeltaT3 ->
  //
                      ^{\wedge}\,TxnStartT0
  //
  //
  //RTDelay is the amount of response time delay included in DeltaT4.
  //RTDelay is recorded per txn because this value can be changed on
  //the fly, and so may vary from txn to txn.
  //TxnStatus is the txn completion code. It is used to indicate errors.
  //For example, in the New Order txn, 1% of txns abort. TxnStatus will
  //reflect this.
          typedef struct _TXN_RECORD_TPCC
                     // common header; must exactly match
TXN RECORD HEADER
                     JULIAN TIME
                                          TxnStartT0;
                                                                          //
start of txn
                     BYTE
                                TxnType;
                                                                //=
TXN_REC_TYPE_TPCC
                     BYTE
                                TxnSubType;
                                                                          //
depends on TxnType
                     // end of common header
                          DeltaT1;
                                                     // menu time (ms)
                     int
                          DeltaT2;
                                                     // keying time (ms)
                          DeltaT3;
                                                     // think time (ms)
                     int
                                                     // response time (ms)
                     int
                          DeltaT4;
                     int
                          RTDelay;
                                                     // response time delay
(ms)
                                          TxnError;
                     int
                                                                // error code
providing more detail for TxnStatus
                     WORD
                                                                // warehouse
                                w id;
                     BYTE
                                                                // assigned
                                d id;
district ID for this thread
                                d id ThisTxn;
                                                     // district ID chosen for
                     BYTE
this particular
                     BYTE
                                TxnStatus;
                                                     // completion status for
txn to indicate errors
                                                     // for word alignment
                     BYTE
                               reserved:
                     TXN DETAILS
                                          TxnDetails;
          } TXN_RECORD_TPCC, *PTXN_RECORD_TPCC;
          // TPC-C Deferred Delivery Txn Record Layout:
  //Incorporating delivery transaction information into the above
          //structure would increase the size of TXN_DETAILS from 8 to 42
bytes.
  //Hence, we store delivery transaction details in a separate structure.
          typedef struct _TXN_RECORD_TPCC_DELIV_DEF
                     // common header; must exactly match
TXN RECORD HEADER
                     JULIAN_TIME
                                          TxnStartT0;
                                                                          //
start of txn
                     BYTE
                                TxnType;
                                                                //=
TXN_REC_TYPE_TPCC_DELIV_DEF
```

```
BYTE
                              TxnSubType;
                                                                                     MAX_NUM_BUFFERS
                                                                           #define
                                                                                                                                         2
=0
                    // end of common header
                                                                           // flags passed in to the constructor
                                                                                     TXN LOG WRITE
                                                                                                                    0x01
                                                                           #define
                                                   // response time (ms)
                                                                           #define
                                                                                     TXN LOG READ
                                                                                                                    0x02
                    int
                         DeltaT4:
                                                                                     TXN LOG SORTED
                                         DeltaTxnExec;
                                                             // execution
                                                                           #define
                                                                                                                    0x04
time (ms)
                    WORD
                                                                                     TXN LOG OS ERROR
                              w id;
                                                             // warehouse
                                                                           #define
                                                                                                                    1
ID
                                                                           #define
                                                                                     TXN LOG NOT SORTED
                                                                                                                    2
                    BYTE
                              TxnStatus;
                                                   // completion status for
                                                                           #define SKIP_CTRL_RECS
txn to indicate errors
                    BYTE
                                                   // for word alignment
                              reserved:
                    short o carrier id;
                                        // carrier id
                                                                           class CTxnLog
                              o_id[10];
                                                   // returned delivery
                    long
transaction ids
                                                                                     private:
          } TXN_RECORD_TPCC_DELIV_DEF,
                                                                                               DWORD
                                                                                                                    iBufferSize;
*PTXN RECORD TPCC DELIV DEF;
                                                                           //buffer allocated size
                                                                                                DWORD
                                                                                                                    iBytesFreeInBuffer;
                                                                           //total bytes available for use in buffer
                                                                                                                               iNumBuffers;
#define
                    TXN_LOG_VERSION
                                                                                     //buffers in use
#define
                    TXN DATA START
                                                   4096
                                                             // offset in
                                                                                                                               iActiveBuffer;
log file where log records start
                                                                                     //indicates which buffer is active: 0 or 1
#define
                    TXN LOG EYE CATCHER
                                                   "BC"
                                                             // signature
                                                                                                                               iIoBuffer;
                                                                                               int
bytes at the start of log file
                                                                                     //buffer for any pending IO operation
                                                                                                                               iFilePointer:
                                                                                               int
                                                                                     //position in file.
          iNextRec;
          // The transaction log has a header as the first 4K block.
                                                                                     //when reading, ordinal value of next record
          typedef struct _TXN_LOG HEADER
                                                                                               // A "save point" is remembered each time
                                                                           GetNextRecord is called with a start time specified.
                                                   EyeCatcher[2];
                                                                                                // The next time it is called, if start time is after the save
                    char
signature bytes; should always be "BC"
                                                                           point, we start scanning from the
                                                             LogVersion;
                                                                                                // save point. This is particularly useful in
                    int
          // set to TXN_LOG_VERSION
                                                                           FindBestInterval, where the log is scanned repeatedly.
                    JŪLIAN TIME
                                                                                               JULIAN TIME
                                                   BeginTxnTS;
                                                                                                                               SavePtTime;
// timestamp of first (lowest) txn start
                    JULIAN_TIME
                                                   EndTxnTS;
                                                                           iSavePtFilePointer;
// timestamp of last (highest) txn completion time
                                                                                               int
                                                             iRecCount;
                                                                           iSavePtNextRec;
                    int
          // number of records in log file
                    BOOL
                                                   bLogSorted;
                                                                                                JULIAN TIME
                                                                                                                    lastTS;
                                                             iFileSize;
                                                                                     //when writing sorted output, used to verify records are sorted
                    int
// file size in bytes
                                                                                                                    bWrite;
                                                                                     //writing log file
                    // the record map provides a fast way to get close to a
                                                                                                BOOL
particular timestamp in a sorted log file.
                                                                                                                               bLogSorted;
                                                                                     // is log file sorted? applies to both input and output
                    struct
                                                                                               JULIAN TIME
//
                                                                                                                               BeginTxnTS;
                                                                                     // timestamp of first (lowest) txn start
//
                              JULIAN TIME
                                                             TS;
                                                                                                JULIAN TIME
                                                                                                                               EndTxnTS;
          // timestamp of record
                                                                                     // timestamp of last (highest) txn completion time
//
iPos;
                    // byte position in file
                                                                                                int
                                                                                                                                         iRecCount;
                                                                                               // number of records in log file
RecMap[RecMapSize];
//#define
                    RecMapSize
                                                             200
                                                                                                                    *pCurrent;
                                                                           //ptr to current buffer
          TXN LOG HEADER, *PTXN LOG HEADER;
                                                                           *pBuffer[MAX_NUM_BUFFERS];
                                                                                               PTXN RECORD HEADER
                                                                                                                               *TxnArray;
                                                                           //transaction record pointer array for sort
#define
          READ_BUFFER_SIZE
                                                   64*1024
          WRITE_BUFFER_SIZE
                                                                                               DWORD
                                                   8*1024
                                                                                                                    dwError:
#define
                                                                                                HANDLE
                                                                                                                    hTxnFile;
          NUM_READ_BUFFERS
#define
                                                                           //handle to log file
                                                   1
#define
          NUM WRITE BUFFERS
                                                   2
```

```
hMapFile;
                   HANDLE
//map file used when sorting the log
                                                                                           int ErrorType() {return ERR TYPE TXNLOG;};
                                      hIoComplete;
                   HANDLE
                                                                                           int ErrorNum() {return m errno;};
//event to signify that there are no pending IOs
                   HANDLE
                                      hLogFileIo;
                                                                                           // TODO: need to complete...
         //event to signal the IO thread to write the inactive buffer
                                                                                           char *ErrorText() {return "";};
                   Spinlock Spin;
//spin lock to protect the txn log file buffers
                                                                       webcInt.dsp
                   int Write(BYTE *ptr, DWORD Size);
                   static void LogFileIO(CTxnLog *);
                                                                       # Microsoft Developer Studio Project File - Name="webclnt" - Package
                                                                       Owner=<4>
         public:
                                                                       # Microsoft Developer Studio Generated Build File, Format Version 5.00
                   CTxnLog::CTxnLog(LPCTSTR szFileName, DWORD
                                                                       # ** DO NOT EDIT **
dwOpts);
                   ~CTxnLog(void);
                                                                       #TARGTYPE "Win32 (x86) Application" 0x0101
                   int WriteToLog(PTXN RECORD TPCC pTxnRcrd);
                                                                       CFG=webclnt - Win32 Release
                   int WriteToLog(PTXN RECORD TPCC DELIV DEF
                                                                       !MESSAGE This is not a valid makefile. To build this project using NMAKE,
pTxnRcrd);
                                                                       !MESSAGE use the Export Makefile command and run
                   int WriteToLog(PTXN RECORD CONTROL
                                                                       !MESSAGE
pCtrlRec);
                                                                       !MESSAGE NMAKE /f "Webclnt.mak".
                   int WriteToLog(PTXN RECORD HEADER pCtrlRec);
                                                                       !MESSAGE
                                                                       !MESSAGE You can specify a configuration when running NMAKE
                   int WriteCtrlRecToLog(BYTE SubType, LPTSTR lpStr,
                                                                       !MESSAGE by defining the macro CFG on the command line. For example:
DWORD dwLen);
                                                                       !MESSAGE
                                                                       !MESSAGE NMAKE /f "Webclnt.mak" CFG="webclnt - Win32 Release"
                   void CloseTransactionLogFile(void);
                                                                       !MESSAGE
                                                                       !MESSAGE Possible choices for configuration are:
                   PTXN RECORD HEADER GetNextRecord(BOOL
                                                                       !MESSAGE
bSkipCtrlRecs = FALSE);
                                                                       !MESSAGE "webclnt - Win32 Release" (based on "Win32 (x86) Application")
                   PTXN RECORD HEADER
                                                                       !MESSAGE "webclnt - Win32 Debug" (based on "Win32 (x86) Application")
GetNextRecord(JULIAN TIME SeekTimeT0, BOOL bSkipCtrlRecs =
                                                                       !MESSAGE
FALSE);
                                                                       # Begin Project
                   int Sort(void);
                                                                       # PROP Scc_ProjName ""
                   PTXN RECORD HEADER GetSortedRecord(int
                                                                       # PROP Scc LocalPath ""
index);
                                                                       CPP=cl.exe
                                                                       MTL=midl.exe
                   inline BOOL IsSorted(void) { return bLogSorted; };
                                                                       RSC=rc.exe
                   inline JULIAN_TIME BeginTS(void) { return
BeginTxnTS; };
                                                                       !IF "$(CFG)" == "webclnt - Win32 Release"
                   inline JULIAN TIME EndTS(void) { return EndTxnTS;
};
                                                                       # PROP BASE Use_MFC 0
                   inline int RecordCount(void) { return iRecCount; };
                                                                       # PROP BASE Use Debug Libraries 0
}:
                                                                       # PROP BASE Output_Dir ".\Release"
                                                                       # PROP BASE Intermediate Dir ".\Release"
class CTXNLOG_ERR: public CBaseErr
                                                                       # PROP BASE Target Dir ""
                                                                       # PROP Use MFC 0
         public:
                                                                       # PROP Use_Debug_Libraries 0
                   enum CTPCC DBLIB ERRS
                                                                       # PROP Output Dir ".\Release"
                                                                       # PROP Intermediate_Dir ".\Release"
                             ERR BAD FILE FORMAT = 1,
                                                                       # PROP Target Dir ""
"File format is invalid."
                                                                       # ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D
                             ERR_UNKNOWN_LOG_VERSION,
                                                                         WINDOWS" /YX /c
"Log file version is unknown."
                                                                       #ADD CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D
                             ERR_BROKEN_LOG_FILE,
                                                                         WINDOWS" /YX /FD /c
"Log file is broken."
                                                                       # ADD BASE MTL /nologo /D "NDEBUG" /win32
                             ERR_LOG_NOT_SORTED,
                                                                       # ADD MTL /nologo /D "NDEBUG" /mktyplib203 /win32
// "Log file is not sorted"
                                                                       # ADD BASE RSC /I 0x409 /d "NDEBUG"
                             ERR INVALID TIME SEQ,
                                                                       # ADD RSC /I 0x409 /d "NDEBUG"
"Internal Error: Record Time Sequence invalid."
                                                                       BSC32=bscmake.exe
                                                                       # ADD BASE BSC32 /nologo
                                                                       # ADD BSC32 /nologo
                   CTXNLOG ERR( int iErr ) { m errno = iErr; };
                                                                       LINK32=link.exe
                   int
                                       m errno;
```

```
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib
                                                                  Project: "db odbc dll"=.\db odbc dll\db odbc dll.dsp - Package Owner=<4>
odbccp32.lib /nologo /subsystem:windows /machine:I386
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
                                                                  Package=<5>
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
                                                                  -{{{
/nologo/subsystem:windows/machine:I386
                                                                  }}}
!ELSEIF "$(CFG)" == "webclnt - Win32 Debug"
                                                                  Package=<4>
                                                                  {{{
# PROP BASE Use MFC 0
                                                                  }}}
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir ".\Debug"
                                                                  # PROP BASE Intermediate Dir ".\Debug"
                                                                  # PROP BASE Target_Dir ""
# PROP Use MFC 0
                                                                  Project: "install"=\install\install.dsp - Package Owner=<4>
# PROP Use_Debug_Libraries 1
# PROP Output Dir ".\Debug"
                                                                  Package=<5>
# PROP Intermediate Dir ".\Debug"
                                                                  {{{
# PROP Target Dir ""
                                                                  }}}
# ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D " DEBUG"
/D "_WINDOWS" /YX /c
                                                                  Package=<4>
# ADD CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D " DEBUG" /D
 WINDOWS" /YX /FD /c
                                                                    Begin Project Dependency
# ADD BASE MTL /nologo /D "_DEBUG" /win32
                                                                    Project Dep Name isapi_dll
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /win32
                                                                    End Project Dependency
# ADD BASE RSC /I 0x409 /d " DEBUG'
                                                                    Begin Project Dependency
# ADD RSC /l 0x409 /d " DEBUG"
                                                                    Project Dep Name tuxapp
                                                                    End Project Dependency
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
                                                                    Begin Project Dependency
                                                                    Project_Dep_Name db_dblib_dll
# ADD BSC32 /nologo
LINK32=link.exe
                                                                    End Project Dependency
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
                                                                    Begin Project Dependency
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib
                                                                    Project Dep Name db odbc dll
odbccp32.lib /nologo /subsystem:windows /debug /machine:I386
                                                                    End Project Dependency
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
                                                                    Begin Project Dependency
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
                                                                    Project Dep Name tm com dll
/nologo/subsystem:windows/debug/machine:I386
                                                                    End Project Dependency
                                                                    Begin Project Dependency
!ENDIF
                                                                    Project_Dep_Name tm_tuxedo_dll
                                                                    End Project Dependency
# Begin Target
                                                                    Begin Project Dependency
                                                                    Project_Dep_Name tpcc_com_all
# Name "webclnt - Win32 Release"
                                                                    End Project Dependency
# Name "webclnt - Win32 Debug"
                                                                    Begin Project Dependency
# End Target
                                                                    Project Dep Name tpcc com ps
# End Project
                                                                    End Project Dependency
                                                                  webclnt.dsw
                                                                  Microsoft Developer Studio Workspace File, Format Version 6.00
                                                                  Project: "isapi_dll"=.\isapi_dll\isapi_dll.dsp - Package Owner=<4>
# WARNING: DO NOT EDIT OR DELETE THIS WORKSPACE FILE!
                                                                  Package=<5>
}}}
Project: "db dblib dll"=.\db dblib dll\db dblib dll.dsp - Package Owner=<4>
                                                                  Package=<4>
Package=<5>
                                                                    Begin Project Dependency
                                                                    Project Dep Name db dblib dll
}}}
                                                                    End Project Dependency
                                                                    Begin Project Dependency
Package=<4>
                                                                    Project_Dep_Name db_odbc_dll
End Project Dependency
}}}
                                                                    Begin Project Dependency
                                                                    Project_Dep_Name tm_tuxedo_dll
End Project Dependency
```

```
Begin Project Dependency
                                                    Project Dep Name tpcc com ps
 Project Dep Name tm com dll
                                                    End Project Dependency
 End Project Dependency
 Begin Project Dependency
 Project Dep Name tm encina dll
                                                   ###################
 End Project Dependency
}}}
                                                   Project: "tpcc_com_ps"=.\tpcc_com_ps\tpcc_com_ps.dsp - Package
Owner=<4>
                                                   Package=<5>
Project: "tm_com_dll"=.\tm_com_dll\tm_com_dll.dsp - Package Owner=<4>
                                                   -{{{
                                                   }}}
Package=<5>
                                                   Package=<4>
}}}
                                                   }}}
Package=<4>
                                                   ###################
 Begin Project Dependency
 Project_Dep_Name tpcc_com_ps
 End Project Dependency
                                                   Project: "tuxapp"=.\tuxapp\tuxapp.dsp - Package Owner=<4>
 Begin Project Dependency
 Project Dep Name tpcc com all
                                                   Package=<5>
 End Project Dependency
                                                   {{{
                                                   }}}
Package=<4>
Begin Project Dependency
Project: "tm encina dll"=.\tm encina dll\tm encina dll.dsp - Package
                                                    Project Dep Name db dblib dll
                                                    End Project Dependency
Owner=<4>
                                                    Begin Project Dependency
                                                    Project Dep Name db odbc dll
Package=<5>
                                                    End Project Dependency
{{{
}}}
Package=<4>
                                                   }}}
                                                   Global:
Package=<5>
                                                   {{{
Project: "tm tuxedo dll"=.\tm tuxedo dll\tm tuxedo dll.dsp - Package
                                                   }}}
Owner=<4>
                                                   Package=<3>
Package=<5>
                                                   {{{
-{{{
                                                   }}}
}}}
                                                   Package=<4>
                                                   }}}
                                                   Stored Procedures
neword.sql
Project: "tpcc com all"=.\tpcc com all\tpcc com all.dsp - Package
Owner=<4>
                                                   -- File: NEWORD.SQL
                                                        Microsoft TPC-C Benchmark Kit Ver. 4.22
Package=<5>
                                                        Copyright Microsoft, 2001
-{{{
                                                   -- Purpose: Creates new order transaction stored procedure
}}}
                                                          Interface Level: 4.10.000
Package=<4>
                                                   use tpcc
 Begin Project Dependency
```

```
begin transaction n
if exists ( select name from sysobjects where name = "tpcc neworder" )
          drop procedure tpcc_neworder
                                                                             -- get district tax and next availible order id and update
                                                                               plus initialize local variables
create proc tpcc neworder
                                                                                       update
                                                                                                  district
                                                    @w_id
                                                                 smallint,
                                                                                       set
                                                                                                  @d tax
                                                                                                             = d tax,
                                                    @d id
                                                                 tinyint,
                                                                                                  @o id
                                                                                                             = d next o id,
                                                                                                  d_{next_o_id} = d_{next_o_id} + 1,
                                                    @c id
                                                                 int,
                                                                                                  @o_{entry_d} = getdate(),
                                                    @o ol cnt
                                                                  tinvint.
                                                    @o_all_local tinyint,
                                                                                                  @li_no
                                                                                                             = 0,
                                                    (a)i_i = 0,
                                                                                                  @commit_flag = 1
@s w id1 smallint = 0, @ol qty1 smallint = 0,
                                                                                        where
                                                                                                  d w id
                                                                                                             = @w id and
                                                    @i_id2 int = 0,
                                                                                                  d_id
                                                                                                           = @d_id
@s_w_id2 smallint = 0, @ol_qty2 smallint = 0,
                                                    (a)i id3 int = 0,

    process orderlines

@s w id3 smallint = 0, @ol gty3 smallint = 0,
                                                    @i_id4 int = 0,
                                                                                       while (@li_no < @o_ol_cnt)
@s_w_id4 smallint = 0, @ol_qty4 smallint = 0,
                                                                                       begin
                                                    (a)i id5 int = 0,
@s w_id5 smallint = 0, @ol_qty5 smallint = 0,
                                                                                                  select @li_no = @li_no + 1
                                                    (a)i id6 int = 0,
@s_w_id6 smallint = 0, @ol_qty6 smallint = 0,
                                                                             -- set i_id, s_w_id, and qty for this lineitem
                                                    (a)i id7 int = 0,
@s_w_id7 smallint = 0, @ol_qty7 smallint = 0,
                                                                                                  select
                                                                                                             @li_id = case @li_no
                                                    @i_id8 int = 0,
                                                                                                                        when 1 then @i id1
@s w id8 smallint = 0, @ol qty8 smallint = 0,
                                                                                                                        when 2 then @i id2
                                                    @i_id9 int = 0,
                                                                                                                        when 3 then @i_id3
@s_w_id9 smallint = 0, @ol_qty9 smallint = 0,
                                                                                                                        when 4 then @i id4
                                                    @i_id10 int = 0,
                                                                                                                        when 5 then @i_id5
@s w id10 smallint = 0, @ol qty10 smallint = 0,
                                                                                                                        when 6 then @i id6
                                                    @i_id11 int = 0,
                                                                                                                        when 7 then @i_id7
@s_w_id11 smallint = 0, @ol_qty11 smallint = 0,
                                                                                                                        when 8 then @i id8
                                                    (a) i id12 int = 0,
                                                                                                                        when 9 then @i id9
@s_w_id12 smallint = 0, @ol_qty12 smallint = 0,
                                                                                                                        when 10 then @i_id10
                                                    @i id13 int = 0,
                                                                                                                        when 11 then @i id11
@s_w_id13 smallint = 0, @ol_qty13 smallint = 0,
                                                                                                                        when 12 then @i_id12
                                                    @i id14 int = 0,
                                                                                                                        when 13 then @i id13
@s_w_id14 smallint = 0, @ol_qty14 smallint = 0,
                                                                                                                        when 14 then @i_id14
                                                    @i id15 int = 0,
                                                                                                                        when 15 then @i_id15
@s w id15 smallint = 0, @ol qty15 smallint = 0
                                                                                                                        end,
                                                                                                             @li_s_w_id = case @li_no
                                                                                                                          when 1 then @s_w_id1
declare
                        numeric(4,4),
                                                                                                                          when 2 then @s w id2
          @w tax
    @d_tax
                 numeric(4,4),
                                                                                                                          when 3 then @s_w_id3
    @c last
                 char(16),
                                                                                                                          when 4 then @s w id4
    @c credit
                  char(2),
                                                                                                                          when 5 then @s w id5
    @c_discount
                                                                                                                          when 6 then @s_w_id6
                   numeric(4,4),
    @i price
                                                                                                                          when 7 then @s w id7
                 numeric(5,2),
    @i_name
                  char(24),
                                                                                                                          when 8 then @s_w_id8
                                                                                                                          when 9 then @s w id9
    @i data
                 char(50),
                                                                                                                          when 10 then @s_w_id10
    @o_entry_d
                   datetime,
    @remote_flag int,
                                                                                                                          when 11 then @s w id11
    @s_quantity
                   smallint,
                                                                                                                          when 12 then @s_w_id12
    @s_data
                 char(50),
                                                                                                                          when 13 then @s_w_id13
    @s dist
                 char(24),
                                                                                                                          when 14 then @s w id14
          @li_no
                       int
                                                                                                                          when 15 then @s_w_id15
          @o id
                               int,
                                                                                                                          end,
          @commit_flag tinyint,
    @li id
                                                                                                             @li_qty = case @li_no
                int,
    @li_s_w_id
                  smallint,
                                                                                                                        when 1 then @ol qty1
                 smallint,
                                                                                                                        when 2 then @ol_qty2
    @li_qty
          @ol number
                               int,
                                                                                                                        when 3 then @ol_qty3
          @c_id_local
                                                                                                                        when 4 then @ol_qty4
                               int
                                                                                                                        when 5 then @ol qty5
begin
                                                                                                                        when 6 then @ol_qty6
                                                                                                                        when 7 then @ol_qty7
```

```
when 8 then @ol_qty8
                                                                                                                                                   @li_no,
                                            when 9 then @ol_qty9
                                            when 10 then @ol qty10
                                                                                                                                                   @li_id,
                                            when 11 then @ol_qty11
                                            when 12 then @ol_qty12
                                            when 13 then @ol qty13
                                                                               @li_s_w_id,
                                            when 14 then @ol qty14
                                                                                                                                                   "dec 31,
                                                                               1899",
                                            when 15 then @ol_qty15
                                            end
                                                                                                                                                   @li_qty,
-- get item data (no one updates item)
                                                                                                                                                   @i_price
                                                                                * @li_qty,
                     select
                                @i price = i price,
                                                                                                                                                   @s dist)
                                @i_name = i_name,
                                (a)i data = i data
                      from
                                item (tablock repeatableread)
                                                                                -- send line-item data to client
                     where
                                i_id = @li_id
                                                                                                               select
                                                                                                                          @i_name,
-- update stock values
                                                                                                                          @s_quantity,
                                                                                                                          b g = case when (
                                                                               (patindex("%ORIGINAL%",@i_data) > 0) and
                     update
                                stock
                                                      = s_ytd + @li_qty,
                     set
                                s ytd
                                @s_quantity
                                                      = s_quantity =
                                                                               (patindex("%ORIGINAL%",@s_data) > 0))
                                                                                                                              then "B" else "G" end,
s_quantity - @li_qty +
                                                                                                                          @i_price,
when (s_quantity - @li_qty < 10) then 91 else 0 end,
                                                                                                                          @i_price * @li_qty
                                s order ent
                                                      = s order cnt + 1,
                                s_remote_cnt
                                                      = s_remote_cnt + case
                                                                                                    end
when (@li_s_w_id = @w_id) then 0 else 1 end,
                                                                                                    else
                                @s\_data\\
                                                      = s_{data}
                                                                                                    begin
                                @s_dist
                                                      = case @d id
                                                                                - no item (or stock) found - triggers rollback condition
                                                       when 1 then
s_dist_01
                                                                                                               select "",0,"",0,0
                                                       when 2 then
                                                                                                               select @commit_flag = 0
s_dist_02
                                                       when 3 then
s_dist_03
                                                                                                    end
                                                       when 4 then
                                                                                          end
s_dist_04
                                                       when 5 then
                                                                                -- get customer last name, discount, and credit rating
s dist 05
                                                       when 6 then
                                                                                                    @c_{last} = c_{last}
                                                                                          select
                                                                                                     @c discount = c discount,
s dist 06
                                                       when 7 then
                                                                                                    @c\_credit = c\_credit,
s dist 07
                                                                                                     (a)c id local = c id
                                                       when 8 then
                                                                                          from
                                                                                                    customer (repeatableread)
s\_dist\_08
                                                                                          where
                                                                                                                          = (a)c id and
                                                                                                    c_id
                                                       when 9 then
                                                                                                    c w id
                                                                                                                          = @w id and
s_dist_09
                                                                                                    c_d_id
                                                                                                                          = @d_id
                                                       when 10 then
s_dist_10
                                                                                -- insert fresh row into orders table
                                                       end
                                                      = @li_id and
                     where
                                s_i_id
                                                                                          insert into orders values (
                                                                                                                          @o_id,
                                                      = @li_s_w_id
                                                                                                                                     @d id,
                                s\_w\_id
                                                                                                                                     @w_id,
-- if there actually is a stock (and item) with these ids, go to work
                                                                                                                                     @c_id_local,
                                                                                                                                     @o_entry_d,
                     if (@@rowcount > 0)
                                                                                                                                     0.
                                                                                                                                     @o ol cnt,
                     begin
                                                                                                                                     @o_all_local)
-- insert order_line data (using data from item and stock)
                                                                                -- insert corresponding row into new-order table
                                insert into order_line values(@o_id,
                                                                    @d_id,
                                                                                          insert into new_order values (
                                                                                                                          @o_id,
                                                                                                                                     @d_id,
                                                                    @w_id,
                                                                                                                                     @w_id)
                                                                                  select warehouse tax
```

```
@c first
                                                                                               char(16),
                                                                                  @c_middle
          select
                    @w_tax = w_tax
                                                                                                 char(2),
          from
                    warehouse (repeatableread)
                                                                                  @c_street_1
                                                                                                char(20),
          where
                    w_id
                               = @w_id
                                                                                  @c_street_2
                                                                                                char(20),
                                                                                  @c_city
                                                                                               char(20),
          if (@commit flag = 1)
                                                                                  @c state
                                                                                               char(2),
                                                                                  @c_zip
                                                                                               char(9),
                    commit transaction n
                                                                                  @c_phone
                                                                                                char(16),
          else
                                                                                  @c since
                                                                                               datetime,
                                                                                  @c credit
                                                                                               char(2),
-- all that work for nuthin!!!
                                                                                  @c_credit_lim numeric(12,2),
                                                                                                numeric(12,2),
                                                                                  @c_balance
                    rollback transaction n
                                                                                  @c discount
                                                                                                numeric(4,4),
                                                                                  @data
                                                                                              char(500),
                                                                                               char(500),
-- return order data to client
                                                                                  @c data
                                                                                  @datetime
                                                                                                datetime,
          select
                    @w tax,
                                                                                  @w ytd
                                                                                               numeric(12,2),
                     @d_tax,
                                                                                  @d_ytd
                                                                                               numeric(12,2),
                    @o_id,
                                                                                              smallint.
                                                                                  @cnt
                     @c last,
                                                                                  @val
                                                                                              smallint,
                                                                                  @screen_data char(200),
                     @c_discount,
                     @c credit,
                                                                                        @d id local
                                                                                                             tinyint,
                     @o_entry_d,
                                                                                        @w_id_local
                                                                                                             smallint,
                    @commit flag
                                                                                        @c_id_local
                                                                                                             int
                                                                             select @screen_data = ""
end
                                                                             begin tran p
go
                                                                             -- get payment date
payment.sql
                                                                                       select
                                                                                                  @datetime = getdate()
-- File: PAYMENT.SQL
                                                                                       if (@c id = 0)
        Microsoft TPC-C Benchmark Kit Ver. 4.22
                                                                                       begin
        Copyright Microsoft, 2001
-- Purpose: Creates payment transaction stored procedure
                                                                             -- get customer id and info using last name
          Interface Level: 4.10.000
                                                                                                                      = count(*)
                                                                                                 select
                                                                                                            @cnt
                                                                                                            customer (repeatableread)
                                                                                                 from
use tpcc
                                                                                                  where
                                                                                                            c last
                                                                                                                       = @c last and
                                                                                                            c_w_id
                                                                                                                      = @c_w_id and
                                                                                                                      = @c_d_id
                                                                                                            c_d_id
if exists (select name from sysobjects where name = "tpcc_payment")
          drop procedure tpcc_payment
go
                                                                                                            @val = (@cnt + 1) / 2
                                                                                                  select
                                                                                                            rowcount @val
                                                                                                 set
create proc tpcc_payment
                               @w_id
                                            smallint,
                                          @c_w_id
                                                        smallint,
                                                                                                 select
                                                                                                            @c_id
                                                                                                                      = c_id
                                          @h amount
                                                         numeric(6,2),
                                                                                                            customer (repeatableread)
                                                                                                 from
                                          @d_id
                                                      tinyint,
                                                                                                 where
                                                                                                            c last
                                                                                                                      = @c_last and
                                          @c_d_id
                                                       tinyint,
                                                                                                                      = (\overline{a})c w id and
                                                                                                            c w id
                                          @c id
                                                      int,
                                                                                                            c_d_id
                                                                                                                      = @c_d_{id}
                                          @c_last
                                                      char(16) = ""
                                                                                                            by c_last, c_first
                                                                                                 order
                                                                                                            rowcount 0
                                                                                                 set
                                                                                       end
declare @w_street_1 char(20),
     @w_street_2
                   char(20),
                                                                               get customer info and update balances
     @w_city
                  char(20),
     @w_state
                   char(2),
                                                                                       update
                                                                                                 customer
     @w_zip
                  char(9),
                                                                                                  @c_balance
                                                                                                                      = c balance
                                                                                                                                            = c balance
                    char(10),
     @w name
                                                                              @h_amount,
     @d_street_1
                   char(20),
                                                                                                 c_payment_cnt
                                                                                                                       = c_payment_cnt + 1,
     @d_street_2
                   char(20),
                                                                                                                       = c_ytd_payment + @h_amount,
                                                                                                 c_ytd_payment
     @d_city
                  char(20),
                                                                                                  (a)c first = c first,
     @d_state
                  char(2),
                                                                                                  @c_middle
                                                                                                                      = c_middle,
     @d_zip
                  char(9),
                                                                                                  @c_last
                                                                                                                       = c^{-} last,
                   char(10),
     @d_name
```

```
= c \text{ street } 1,
                     @c street 1
                                                                                                  @w name
                                                                                                                       = w_name,
                     @c_street_2
                                          = c \text{ street } 2,
                                                                                                  @w_id_local
                                                                                                                       = w_id
                     @c_city
                                          = c_{city}
                                                                                        where
                                                                                                  w_id
                                                                                                                       = (a) w id
                     @c_state = c_state,
                                                                             -- create history record
                                          = c_zip,
                     @c_zip
                     (a)c phone = c phone,
                     @c credit = c credit,
                                                                                        insert into history values (
                                                                                                                        @c_id_local,
                     @c_credit_lim
                                                                                                                                  @c d id,
                                          = c credit lim,
                     @c_discount
                                          = c discount,
                                                                                                                                  @c_w_id,
                     (a)c since = c since,
                                                                                                                                  @d_id_local,
                     @data
                                          = c_data,
                     @c_id_local
                                                                                                                                  @w_id_local,
                                          = c id
          where
                     c id
                                          = (a)c id and
                                                                                                                                  @datetime,
                                          = @c_w_{id} and
                                                                                                                                  @h_amount,
                    c_w_id
                                                                                                                                  @w_name + "
                                          = @c_d_id
                    c_d_id
                                                                             @d_name)
-- if customer has bad credit get some more info
                                                                             commit tran p
          if(@c\_credit = "BC")
                                                                             -- return data to client
          begin
                                                                             select
                                                                                        @c_id,
          compute new info
                                                                                        @c last,
                                                                                        @datetime,
                     select @c data
                                          = convert(char(5),@c id) +
                                                                                        @w street 1,
                                           convert(char(4),@c_d_id) +
                                                                                        @w_street_2,
                                           convert(char(5),@c_w_id) +
                                                                                        @w_city,
                                           convert(char(4),@d id) +
                                                                                        @w_state,
                                                                                        @w_zip,
                                           convert(char(5),@w_id) +
                                           convert(char(19),@h amount) +
                                                                                        @d street 1,
                                           substring(@data, 1, 458)
                                                                                        @d_street_2,
                                                                                        @d_city,
                                                                                        @d_state,
-- update customer info
                                                                                        @d_zip,
                                                                                        @c first,
                     update
                                                                                        @c_middle,
                               customer
                                          = @c data
                                                                                        @c street 1,
                    set
                               c data
                                                                                        @c_street_2,
                                                                                        @c city,
                     where
                               c id
                                          = (a)c id and
                                                                                        @c_state,
                               c_w_id
                                          = @c_w_id and
                               c_d_id
                                          = @c_d_id
                                                                                        @c_zip,
                                                                                        @c phone,
                                                                                        @c_since,
                               @screen_data = substring (@c_data,1,200)
                     select
                                                                                        @c credit,
                                                                                        @c_credit_lim,
          end
                                                                                        @c_discount,
-- get district data and update year-to-date
                                                                                        @c_balance,
                                                                                        @screen data
          update
                     district
                                          = d_ytd + @h_amount,
                     d_ytd
          set
                                                                             go
                     ad street 1
                                          = d street 1,
                     @d_street_2
                                          = d_street_2,
                                          = d city,
                     @d city
                                                                             ordstat.sql
                     (a)d_state = d_state,
                     @d zip
                                          = d zip,
                                                                              -- File: ORDSTAT.SQL
                     @d name
                                          = d name,
                                                                                      Microsoft TPC-C Benchmark Kit Ver. 4.22
                    @d_id_local
                                          = d id
                                                                                      Copyright Microsoft, 2001
          where
                                          = @w id and
                     d w id
                                                                             -- Purpose: Creates order status transaction stored procedure
                     d_id
                                          = @d_id
                                                                                        Interface Level: 4.10.000
-- get warehouse data and update year-to-date
                                                                             use tpcc
          update
                     warehouse
                                                                             go
                                          = w_ytd + @h_amount,
                     w_ytd
          set
                     @w_street_1
                                          = w_street_1,
                                                                             if exists ( select name from sysobjects where name = "tpcc_orderstatus" )
                                          = w_street_2,
                     @w_street_2
                                                                                        drop procedure tpcc_orderstatus
                     @w city
                                          = w city,
                                                                             go
                     @w_state = w_state,
                     @w_zip
                                          = w_zip,
                                                                            create proc tpcc_orderstatus
                                                                                                             @w_id
                                                                                                                       smallint,
```

```
@d_id
                                                         tinyint,
                                                                                                           goto custnotfound
                                                                                                end
                                              @c id
                                                         int.
                                                         char(16) = ""
                                              @c_last
                                                                                      get order info
                                                                                                select
                                                                                                           @o id
                                                                                                                                  = o id,
                                                                                                           @o_entry_d
                                                                                                                                  = o_entry_d,
declare @c_balance
                                  numeric(12,2),
                                                                                                           @o_carrier_id
                                                                                                                                  = o_carrier_id
     @c first
                                  char(16),
                                                                                                from
                                                                                                           orders (serializable)
     @c middle
                                  char(2),
                                                                                                where
                                                                                                           o c id
                                                                                                                                  = (a)c id and
     @o_id
                                              int,
                                                                                                           o_d_id
                                                                                                                                  = @d_id and
     @o_entry_d
                                                                                                                                  = (\widehat{a}) \mathbf{w}_{-} \mathbf{i} \mathbf{d}
                                  datetime,
                                                                                                           o_w_id
     @o carrier id
                                  smallint,
                                                                                                order
                                                                                                           by o_id asc
                                  smallint
     @cnt
                                                                                     - select order lines for the current order
begin tran o
                                                                                                select
                                                                                                           ol_supply_w_id,
if(@c_id = 0)
                                                                                                           ol_i_id,
                                                                                                           ol_quantity,
           begin
                                                                                                           ol amount,
                                                                                                           ol_delivery_d
-- get customer id and info using last name
                                                                                                           order line (repeatableread)
                                                                                                from
                       select
                                  @cnt
                                             = (count(*)+1)/2
                                                                                                where
                                                                                                           ol_o_id = @o_id and
                                  customer (repeatableread)
                                                                                                           of \overrightarrow{d} id = (\overrightarrow{a})\overrightarrow{d} id and
                      from
                       where
                                  c_last
                                              = @c_last and
                                                                                                           ol_w_id = @w_id
                                  c\_w\_id
                                             = (\widehat{a}) \mathbf{w}_{i} and
                                  c_d_id
                                             = (a)d id
                                                                                    custnotfound:
                      set
                                  rowcount @cnt
                                                                                    commit tran o
                      select
                                  @c id
                                                         = c id,
                                                                                     -- return data to client
                                  @c_balance
                                                         = c_balance,
                                    \overline{@}c_first = c_first,
                                                                                    select
                                                                                                @c_id,
                                    (a)c last = c last,
                                                                                                @c last,
                                    @c_middle
                                                         = c_middle
                                                                                                @c_first,
                       from
                                  customer (repeatableread)
                                                                                                @c middle,
                       where
                                  c_last
                                                         = @c_last and
                                                                                                @o_entry_d,
                                                                                                @o_carrier id,
                                                         = \overline{(a)} w id and
                                  c w id
                                                         = @d_id
                                                                                                @c_balance,
                                  c_d_id
                                  by c_w_id, c_d_id, c_last, c_first
                      order
                                                                                                @o_id
                                  rowcount 0
                       set
                                                                                    go
           end
           else
                                                                                    delivery.sql
           begin
                                                                                     -- File: DELIVERY.SQL
                                                                                             Microsoft TPC-C Benchmark Kit Ver. 4.22
-- get customer info if by id
                                                                                             Copyright Microsoft, 2001
                                                                                    -- Purpose: Creates delivery transaction stored procedure
                       select
                                  @c_balance
                                                         = c_balance,
                                  (a)c first = c first,
                                                                                               Interface Level: 4.10.000
                                  @c_middle
                                                         = c_middle,
                                  @c_last
                                                         = c^{-} last
                                                                                    use tpcc
                       from
                                  customer (repeatableread)
                                                                                    go
                                                         = @c_id and
                       where
                                  c_id
                                  c d id
                                                         = (a)d id and
                                                                                    if exists (select name from sysobjects where name = "tpcc_delivery")
                                  c_w_id
                                                         = @w_id
                                                                                                drop procedure tpcc_delivery
                       select
                                  @cnt
                                              = @@rowcount
                                                                                    create proc tpcc_delivery
                                                                                                                       @w_id
                                                                                                                                     smallint,
           end
                                                                                                                                  @o_carrier_id smallint
-- if no such customer
                                                                                    as
           if (@cnt = 0)
                                                                                    declare @d_id
                                                                                                           tinyint,
           begin
                                                                                         @o_id
                                                                                                           int,
                      raiserror("Customer not found",18,1)
                                                                                         @c_id
                                                                                                           int,
```

```
@total
                     numeric(12,2),
                                                                                                                          c_delivery_cnt
    @oid1
                     int,
                                                                               c delivery cnt + 1
    @oid2
                     int,
                                                                                                                where
                                                                                                                          c_w_id
                                                                                                                                                = @w_id
    @oid3
                     int,
    @oid4
                                                                                                                                                = @d_id
                     int
                                                                                                                           c_d_id
    @oid5
                                                                               and
                     int,
    @oid6
                     int,
                                                                                                                           c_id
                                                                                                                                                = (a)c id
    @oid7
                     int,
    @oid8
                     int,
                                                                                                     end
    @oid9
                     int.
    @oid10
                                                                                          select @oid1 = case @d_id when 1 then @o_id else @oid1 end,
                                                                                        @oid2 = case @d_id when 2 then @o_id else @oid2 end,
select (a)d id = 0
                                                                                        @oid3 = case @d id when 3 then @o id else @oid3 end,
                                                                                        @oid4 = case @d_id when 4 then @o_id else @oid4 end,
                                                                                        @oid5 = case @d_id when 5 then @o_id else @oid5 end,
begin tran d
                                                                                        @oid6 = case @d_id when 6 then @o_id else @oid6 end,
           while (@d id < 10)
                                                                                        @oid7 = case @d id when 7 then @o id else @oid7 end,
          begin
                                                                                        @oid8 = case @d_id when 8 then @o_id else @oid8 end,
                                                                                        @oid9 = case @d_id when 9 then @o_id else @oid9 end,
               select @d id = @d id + 1,
                                                                                        @oid10 = case @d id when 10 then @o id else @oid10 end
                                \textcircled{a}total = 0,
                                \bar{(a)}o id = 0
                                                                                  end
                                top 1
                                                                               commit tran d
                     select
                                @o_id
                                           = no_o_id
                                                                               -- return delivery data to client
                     from
                                new_order (serializable updlock)
                                no w id = @w id and
                     where
                                no_d = (a)d_i d
                                                                               select @oid1,
                     order
                                by no o id asc
                                                                                    @oid2,
                                                                                    @oid3,
               if (@@rowcount \Leftrightarrow 0)
                                                                                    @oid4,
                                                                                    @oid5,
                                                                                    @oid6,
-- claim the order for this district
                                                                                    @oid7,
                                                                                    @oid8,
                                                                                    @oid9,
                                delete
                                           new order
                                           no_w_id = @w_id and
                                where
                                                                                    @oid10
                                           no d id = \overline{a} d id and
                                           no_o_id = @o_id
                                                                               go
-- set carrier id on this order (and get customer id)
                                                                               stocklev.sql
                                update
                                           orders
                                set
                                           o_carrier_id
                                                                 =
                                                                                         STOCKLEV.SQL
@o carrier id,
                                                                                        Microsoft TPC-C Benchmark Kit Ver. 4.22
                                           @c_id
                                                                 = o_c_id
                                                                                        Copyright Microsoft, 2001
                                where
                                                                 = (\overline{a}) \mathbf{w} id
                                           o_w_id
                                                                                  Purpose: Creates stock level transaction stored procedure
and
                                           o_d_id
                                                                 = @d_id
                                                                                          Interface Level: 4.10.000
and
                                           o_id
                                                                 = @o_id
                                                                               use tpcc
-- set date in all lineitems for this order (and sum amounts)
                                                                               if exists (select name from sysobjects where name = "tpcc_stocklevel")
                                update
                                           order line
                                                                                          drop procedure tpcc_stocklevel
                                                                 = getdate(),
                                           ol_delivery_d
                                set
                                                                 = (a)total +
                                           @total
ol_amount
                                                                               create proc tpcc_stocklevel
                                                                                                                @w_id
                                                                                                                                      smallint,
                                where
                                           ol_w_id
                                                                 = @w id
                                                                                                                           @d id
                                                                                                                                                tinvint,
and
                                                                                                                           @threshhold
                                                                                                                                                smallint
                                                                 = (a)d id
                                           ol_d_id
                                                                               as
and
                                                                 = @o_id
                                           ol_o_id
                                                                               declare
                                                                                          @o_id_low int,
                                                                                          @o_id_high int
-- accummulate lineitem amounts for this order into customer
                                                                                          @o id low
                                                                               select
                                                                                                                = (d next o id - 20),
                                update
                                           customer
                                                                                          @o_id_high
                                                                                                                = (d_next_o_id - 1)
                                           c balance = c balance + @total,
                                set
                                                                               from
                                                                                          district
```

```
where
          d w id
                                = @w id and
                                                                                drop proc tpcc delivery
           d id
                                = (a)d id
                                                                                drop proc tpcc_neworder
                                                                                drop proc tpcc_orderstatus
select
          count(distinct(s_i_id))
                                                                                drop proc tpcc_payment
           stock, order_line
                                                                                drop proc tpcc_stocklevel
from
where
           ol w id
                                = @w id and
                                                                                drop proc tpcc version
          ol_d_id
                                = (a)d id and
                                                                                drop table order line null
          ol_o_id
                                  between @o_id_low and
                                  @o_id_high and
          s_w_id
                                = ol w id and
                                                                                create proc tpcc_delivery
                                                                                                                               smallint,
                                                                                                                 @w_id
           s_i_id
                                = ol_i_id and
          s\_quantity < @threshhold
                                                                                @o carrier id smallint
go
                                                                                declare @d_id tinyint,
                                                                                     @o_id int,
version.sql
                                                                                     @c_id int,
                                                                                     atotal numeric(12,2),
-- File: VERSION.SQL
                                                                                     @oid1 int,
        Microsoft TPC-C Benchmark Kit Ver. 4.22
                                                                                     @oid2 int,
        Copyright Microsoft, 2001
                                                                                     @oid3 int,
-- Purpose: Returns version level of TPC-C stored procs
                                                                                     @oid4 int,
-- Note: Always update the return value of this proc for
                                                                                     @oid5 int,
        any interface changes or "must have" bug fixes.
                                                                                     @oid6 int,
                                                                                     @oid7 int
-- The value returned by this SP defines the "interface level",
                                                                                     @oid8 int,
-- which must match between the stored procs and the client code.
                                                                                     @oid9 int,
-- The interface level may be down rev from the current kit. This
                                                                                     @oid10 int
-- indicates that the interface hasn't changed since that version.
                                                                                declare @delaytime varchar(30)
use tpcc
                                                                                -- uniform random delay of 0 - 1 second; avg = 0.50
                                                                                select @delaytime = '00:00:0' + cast(cast((rand()*1.00) as decimal(4,3))) as
if exists ( select name from sysobjects where name = "tpcc version" )
                                                                                char(5))
           drop procedure tpcc_version
                                                                                waitfor delay @delaytime
go
                                                                                select 3001, 3001, 3001, 3001, 3001, 3001, 3001, 3001, 3001, 3001
create proc tpcc_version
declare
           @version char(8)
                                                                                GO
begin
                                                                                create proc tpcc neworder
           select @version = "4.10.000"
                                                                                                                                                     smallint,
                                                                                                                                       @w id
           select @version as "Version"
                                                                                                                                       @d id
                                                                                                                                                    tinyint,
end
                                                                                                                                       @c_id
                                                                                                                                                    int,
                                                                                                                                       @o ol cnt
                                                                                                                                                      tinyint,
go
                                                                                                                                       @o_all_local tinyint,
                                                                                                                                       @i_id1 int = 0,
                                                                                @s w id1 smallint = 0, @ol qty1 smallint = 0,
                                                                                                                                       @i_id2 int = 0,
null-txn.sql
                                                                                @s w id2 smallint = 0, @ol qty2 smallint = 0,
                                                                                                                                       @i_id3 int = 0,
-- TPC-C Null Txn Stored Procs
                                                                                @s w id3 smallint = 0, @ol qty3 smallint = 0,
-- Microsoft TPC-C Kit
                                                                                                                                       (a)i id4 int = 0,
-- 8/17/99
                                                                                @s_w_id4 smallint = 0, @ol_qty4 smallint = 0,
                                                                                                                                       @i id5 int = 0,
-- This script will create stored procs which accept the same parameters and
                                                                                @s_w_id5 smallint = 0, @ol_qty5 smallint = 0,
return correctly formed
                                                                                                                                       @i id6 int = 0,
-- results sets to match the standard TPC-C stored procs. Of course, the advan-
                                                                                @s_w_id6 smallint = 0, @ol_qty6 smallint = 0,
tage is that these
                                                                                                                                       @i id7 int = 0,
-- stored procs place almost no load on SQL Server and do not require a
                                                                                @s_w_id7 \text{ smallint} = 0, @ol_qty7 \text{ smallint} = 0,
database.
                                                                                                                                       @i id8 int = 0,
                                                                                @s_w_id8 smallint = 0, @ol_qty8 smallint = 0,
-- The purpose of these stored procs is to size and test the web client without the
                                                                                                                                       @i_id9 int = 0,
need of a fully
                                                                                @s w id9 smallint = 0, @ol qty9 smallint = 0,
-- scaled database.
                                                                                                                                       @i_id10 \text{ int} = 0,
                                                                                @s_w_id10 smallint = 0, @ol_qty10 smallint = 0,
```

```
@i_id11 \text{ int} = 0,
                                                                                                    end
@s_w_id11 \text{ smallint} = 0, @ol_qty11 \text{ smallint} = 0,
                                                                                          else
                                                     (a)i id12 int = 0,
                                                                                                    begin
@s_w_id12 \text{ smallint} = 0, @ol_qty12 \text{ smallint} = 0,
                                                                                                    select 'Item Name blah',17,'G', @i_price, @i_price *
                                                     @i_id13 int = 0,
                                                                               @li_qty
@s w id13 smallint = 0, @ol qty13 smallint = 0,
                                                                                                    end
                                                     @i id14 int = 0,
@s_w_id14 smallint = 0, @ol_qty14 smallint = 0,
                                                                                          end
                                                     @i id15 int = 0,
@s_w_id15 smallint = 0, @ol_qty15 smallint = 0
                                                                               -- return order data to client
                                                                                                    @w \tan = 0.1234,
                                                                                          select
                                                                                                    (a)d tax = 0.0987,
                                                                                                    @o_{id} = 3001,
declare
          @w_tax
                        numeric(4,4),
    @d tax
                                                                                                    @c last = 'BAROUGHTABLE',
                 numeric(4,4),
                                                                                                    @c_discount = 0.2198,
    @c_last
                 char(16),
    @c credit
                  char(2),
                                                                                                    @c credit = 'GC',
    @c_discount
                   numeric(4,4),
                                                                                                    @o_entry_d = getdate()
    @i_price
                 numeric(5,2),
    @i name
                   char(24),
                                                                                          select
                                                                                                    @w tax,
    @o_entry_d
                    datetime,
                                                                                                    @d_tax,
           @li no
                       int,
                                                                                                    @o id,
           @o_id
                                int.
                                                                                                    @c_last,
          @commit_flag tinyint,
                                                                                                    @c discount,
    @li id
                 int,
                                                                                                    @c_credit,
                                                                                                    @o_entry_d,
                 smallint
    @li_qty
                                                                                                    @commit flag
declare @delaytime varchar(30)
                                                                               end
begin
  -- uniform random delay of 0 - 0.6 second; avg = 0.3
                                                                               GO
  select @delaytime = '00:00:0' + cast(cast((rand()*0.60) as decimal(4,3))) as
char(5))
                                                                               create proc tpcc_orderstatus @w_id
                                                                                                                                     smallint,
  waitfor delay @delaytime
                                                                               @d_id
                                                                                                    tinyint,
  -- process orderlines
           select @commit flag = 1, @li no = 0
                                                                               @c id
                                                                                                    int,
  while (@li_no < @o_ol_cnt)
                                                                                         char(16) = "
                                                                               @c_last
           begin
                                                                               as
          select @li id = case @li no
                                                                               declare @c_balance
                                when 1 then @i_id1
                                                                                                               numeric(12,2),
                                  when 2 then ai id2
                                                                                                               char(16),
                                                                                    @c first
                                  when 3 then @i_id3
                                                                                    @c_middle
                                                                                                               char(2),
                                  when 4 then @i id4
                                                                                    @o id
                                                                                                                          int.
                                  when 5 then @i id5
                                                                                    @o entry d
                                                                                                               datetime,
                                  when 6 then @i_id6
                                                                                                               smallint,
                                                                                    @o_carrier_id
                                  when 7 then @i id7
                                                                                         @ol cnt
                                                                                                                          smallint
                                  when 8 then @i_id8
                                  when 9 then @i id9
                                                                               declare @delaytime varchar(30)
                                  when 10 then @i_id10
                                  when 11 then @i id11
                                                                                 -- uniform random delay of 0 - 0.2 second; avg = 0.1
                                  when 12 then @i_id12
                                  when 13 then @i_id13
                                                                                 select @delaytime = '00:00:0' + cast(cast((rand()*0.20) as decimal(4,3)) as
                                  when 14 then @i id14
                                  when 15 then @i_id15
                                                                                 waitfor delay @delaytime
                                  end
                                                                                          select
                                                                                              @c id = 113,
    select@li no = @li no + 1
                                                                                              @c_balance = -10.00,
           select @i_price = 23.45, @li_qty = @li_no
                                                                                              @c_first = '8YCodgytqCj8',
                                                                                              @c_{middle} = 'OE'
          if (@li_id = 999999)
                                                                                              @c_last = 'OUGHTOUGHTABLE',
                     begin
                                                                                              @o id = 3456,
                     select ",0,",0,0
                                                                                              @o_entry_d = getdate(),
                     select @commit flag = 0
                                                                                              @o_carrier_id = 1
```

```
@d ytd
                                                                                              numeric(12,2),
          select @ol cnt = (rand() * 11) + 5
                                                                                 @cnt
                                                                                             smallint,
          SET ROWCOUNT @ol cnt
                                                                                 @val
                                                                                             smallint,
                                                                                                 char(200),
                                                                                 @screen_data
          select
                                                                                                 @d id local
                                                                                                                      tinyint,
                    ol supply w id,
                                                                                                 @w id local
                                                                                                                      smallint,
                    ol_i_id,
                                                                                                 @c id local
                                                                                                                      int
              ol quantity,
              ol amount,
                                                                            declare @delaytime varchar(30)
              ol delivery d
                                                                              -- uniform random delay of 0 - 0.3 second; avg = 0.15
          from order_line_null
                                                                              select @delaytime = '00:00:0' + cast(cast((rand()*0.30) as decimal(4,3)) as
          select @c id,
                                                                              waitfor delay @delaytime
            @c_last,
            @c first,
            @c_middle,
                                                                              select @screen data = "
            @o_entry_d,
            @o_carrier_id,
            @c_balance,
                                                                            -- get customer info and update balances
            @o id
                                                                                      select
                                                                                                 @d street 1 = 'rqSHHakqyV',
GO
                                                                                                 \textcircled{a}d street 2 = 'zZ98nW3BR2s',
                                                                                                 @d city = 'ArNr4GNFV9',
create proc tpcc_payment @w_id
                                     smallint,
                                                                                                 @d_state = 'aV',
                                                              @c\_w\_id
                                                                                                @d_{zip} = '453511111'
  smallint,
                                                               @h_amount
                                                                            -- get warehouse data and update year-to-date
   numeric(6,2),
                                                               @d_id
                                                                                      select
tinyint,
                                                                                                 @w street 1 = \text{'rqSHHakqyV'},
                                                                                                 @w_street_2 = 'zZ98nW3BR2s',
                                                               @c_d_id
 tinyint,
                                                                                                @w city = 'ArNr4GNFV9',
                                                                                                 \overline{(a)}w state = 'aV',
                                                               @c id
                                                                                                @w_{zip} = '453511111'
int,
                                                               @c last
 char(16) = "
                                                                                      select
                                                                                                               = 123,
                                                                                                @c id
                                                                                                @c_balance = -10000.00,
declare @w_street_1 char(20),
                                                                                                @c_first
                                                                                                           = 'KmR03Xureb',
     @w street 2
                   char(20),
                                                                                                 @c middle = 'OE',
                                                                                                           = 'BAROUGHTBAR',
     @w_city
                  char(20),
                                                                                                @c_last
     @w state
                   char(2),
                                                                                                 @c street 1 = 'QpGdOHjv8mR9vNI8V',
                  char(9),
                                                                                                 @c_street_2 = 'dzKoCObBqbC3yu',
     @w_zip
                    char(10),
                                                                                                 @c_city
                                                                                                             = 'zAKZXdC037FQxq',
     @w name
                                                                                                             = 'QA',
     @d_street_1
                                                                                                 @c_state
                   char(20),
     @d street 2
                   char(20),
                                                                                                @c zip
                                                                                                             = '7003111111',
     @d city
                  char(20),
                                                                                                 @c phone
                                                                                                              = '2967264064528555',
     @d_state
                                                                                                @c_credit
                                                                                                             = 'GC',
                  char(2),
     @d zip
                  char(9),
                                                                                                 @c credit \lim = 50000.00,
                                                                                                @c_{discount} = 0.3069,
     @d_name
                   char(10),
     @c first
                                                                                                             = getdate(),
                 char(16),
                                                                                                @c since
     @c_middle
                                                                                                @datetime
                   char(2),
                                                                                                             = getdate()
     @c_street_1
                   char(20),
     @c_street_2
                   char(20),
                 char(20),
     @c_city
     @c state
                  char(2),
                                                                            -- return data to client
     @c_zip
                  char(9),
     @c phone
                   char(16),
                                                                            select @c id,
     @c_since
                   datetime,
                                                                                                 @c_last,
     @c credit
                  char(2),
                                                                                                @datetime,
     @c credit lim numeric(12,2),
                                                                                                 @w_street_1,
     @c_balance
                   numeric(12,2),
                                                                                                 @w_street_2,
     @c_discount
                   numeric(4,4),
                                                                                                 @w_city,
                                                                                                 @w_state,
     @data
                 char(500),
     @c data
                  char(500),
                                                                                                 @w zip,
     @datetime
                   datetime,
                                                                                                 @d_street_1,
     @w\_ytd
                   numeric(12,2),
                                                                                                 @d_street_2,
```

```
@d city,
                                                                                  insert into order line null values (110, 1, getdate(), 5, 123.45)
                                                                                  insert into order_line_null values (111, 1, getdate(), 1, 123.45)
                      @d_state,
                      @d_zip,
                                                                                  insert into order line null values (112, 1, getdate(), 2, 123.45)
                      @c_first,
                                                                                  insert into order_line_null values (113, 1, getdate(), 3, 123.45)
                      @c middle,
                                                                                  insert into order_line_null values (114, 1, getdate(), 4, 123.45)
                      @c street 1,
                                                                                  insert into order line null values (115, 1, getdate(), 5, 123.45)
                      @c_street_2,
                                                                                  GO
                      @c_city,
                      @c_state,
                      @c zip,
                      @c_phone,
                      @c_since,
                      @c credit,
                      @c_credit_lim,
                      @c discount,
                      @c_balance,
                      @screen_data
GO
                                                        smallint,
create proc tpcc stocklevel
                                 @w id
                                                                   @d_id
tinyint,
                                                                   @threshhold
           smallint
declare @delaytime varchar(30)
  -- uniform random delay of 0 - 3.6 second; avg = 1.8
  select @delaytime = '00:00:0' + cast(cast((rand()*3.60) as decimal(4,3))) as
char(5))
  waitfor delay @delaytime
  select 49
GO
create proc tpcc_version
declare @version
                      char(8)
begin
           select @version = '4.10.000'
           select @version as 'Version'
end
GO
CREATE TABLE order_line_null (
           [ol i id] [int] NOT NULL,
           [ol\_supply\_w\_id] \ [smallint] \ NOT \ NULL \ ,
           [ol\_delivery\_d] \ [datetime] \ NOT \ NULL \ ,
           [ol_quantity] [smallint] NOT NULL,
           [ol_amount] [numeric](6, 2) NOT NULL
) ON [PRIMARY]
GO
insert into order_line_null values (101, 1, getdate(), 1, 123.45)
insert into order line null values (102, 1, getdate(), 2, 123.45)
insert into order_line_null values (103, 1, getdate(), 3, 123.45)
insert into order_line_null values (104, 1, getdate(), 4, 123.45)
insert into order_line_null values (105, 1, getdate(), 5, 123.45)
insert into order_line_null values (106, 1, getdate(), 1, 123.45)
insert into order line null values (107, 1, getdate(), 2, 123.45)
insert into order_line_null values (108, 1, getdate(), 3, 123.45)
insert into order_line_null values (109, 1, getdate(), 4, 123.45)
```

## Appendix B: Database Design

#### **Database Build**

### backup.sql

```
-- File: BACKUP.SQL
```

Microsoft TPC-C Benchmark Kit Ver. 4.22

-- Copyright Microsoft, 2001

-- Purpose: Creates backup of tpcc database

```
declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
```

select "Start date:", convert(varchar(30),@startdate,9)

dump database tpcc to tpccback1, tpccback2, tpccback3, tpccback4 with init, stats = 1

```
select @enddate = getdate()
select "End date: ", convert(varchar(30),@enddate,9)
select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
```

go

### backupdev.sql

```
-- File: BACKUPDEVB.SQL
```

Microsoft TPC-C Benchmark Kit Ver. 4.22

Copyright Microsoft, 2001

-- Purpose: Creates tpcc database Backup Devices

use master go

-- create backup devices

exec sp\_addumpdevice 'disk','tpccback1','Y:\tpccback1.dmp' go exec sp\_addumpdevice 'disk','tpccback2','Y:\tpccback2.dmp' go exec sp\_addumpdevice 'disk','tpccback3','Z:\tpccback3.dmp' go exec sp\_addumpdevice 'disk','tpccback4','Z:\tpccback4.dmp' go

### createdb.sql

```
-- File: CREATEDB.SQL
```

Microsoft TPC-C Benchmark Kit Ver. 4.22

Copyright Microsoft, 2001

-- Purpose: Creates tpcc database and backup files

use master go

Create temporary table for timing

if exists ( select name from sysobjects where name = 'tpcc\_timer' ) drop table tpcc\_timer

```
create table tpcc timer
                                                 char(30).
          start date
          end date
                                                 char(30)
insert
          into tpcc timer values (0,0)
go
          Store starting time
update
          tpcc_timer
set
          start_date = (select convert(char(30), getdate(),9))
go
-- create main database files
CREATE DATABASE tpcc
ON PRIMARY
                             = MSSQL tpcc root,
         NAME
                             = "C:\MSSQL_tpcc_root.mdf",
         FILENAME
         SIZE
                             = 8MB,
          FILEGROWTH
                             =0),
FILEGROUP
                   MSSQL misc fg
          NAME
                             = MSSQL misc1,
                             = "J:".
         FILENAME
          SIZE
                             = 35000MB,
          FILEGROWTH
                             = 0),
FILEGROUP
                   MSSQL\_cs\_fg
          NAME
                             = MSSQL_cs1,
         FILENAME
                             = "F:"
                             = 20000MB,
          SIZE
          FILEGROWTH
                             = 0),
                             = MSSQL cs2,
          NAME
                             = "G:"
         FILENAME
                             = 20000MB
          SIZE
          FILEGROWTH
                             = 0),
          NAME
                             = MSSQL_cs3,
          FILENAME
                             = "H:".
                             = 20000MB,
          SIZE
          FILEGROWTH
                             = 0),
                             = MSSQL_cs4,
          NAME
          FILENAME
                             = "I:"
                             = 20000MB,
          SIZE
          FILEGROWTH
                             =0
LOG ON
                             =MSSQL_tpcc_log,
          NAME
          FILENAME
                             ="K:"
                             =45000MB,
          SIZE
          FILEGROWTH
                             =0)
COLLATE Latin1_General_BIN
-- Store ending time
update
          tpcc timer
set
          end_date = (select convert(char(30), getdate(),9))
go
select "Elapsed time (in seconds): ", datediff(second,(select start date from
tpcc_timer),(select end_date from tpcc_timer))
          remove temporary table
if exists ( select name from sysobjects where name = 'tpcc timer' )
          drop table tpcc_timer
```

#### TRUE EXEC sp\_indexoption 'stock'. 'DisAllowPageLocks', TRUE EXEC sp\_indexoption 'order\_line', 'DisAllowRowLocks', dbopt1.sql TRUE EXEC sp indexoption 'orders', 'DisAllowRowLocks', TRUE EXEC sp\_indexoption 'new order', 'DisAllowRowLocks', -- File: DBOPT1.SQL **TRUE** Microsoft TPC-C Benchmark Kit Ver. 4.22 EXEC sp\_indexoption 'item', 'DisAllowRowLocks', Copyright Microsoft, 2001 **TRUE** -- Purpose: Sets database options for data load EXEC sp\_indexoption 'item', 'DisAllowPageLocks', **TRUE** use master go Print'' Print '\*\*\*\*\*\*\*\*\*\*\*\* exec sp\_dboption tpcc,'select into/bulkcopy',true Print 'Pre-specified Locking Hierarchy:' exec sp dboption tpcc,'trunc. log on chkpt.',true Print ' Lockflag = 0 ==> No pre-specified hierarchy' exec sp\_dboption tpcc,'torn page detection',false Print ' Lockflag = 1 ==> Lock at Page-level then Table-level' Print ' Lockflag = 2 ==> Lock at Row-level then Table-level' Print ' Lockflag = 3 ==> Lock at Table-level' Print '' use tpcc go SELECT name,lockflags checkpoint FROM sysindexes WHERE object\_id('warehouse') = id OR object id('district') = id OR dbopt2.sql object\_id('customer') = id OR object id('stock') -- File: DBOPT2.SOL object\_id('orders') = id OR Microsoft TPC-C Benchmark Kit Ver. 4.22 object id('order line') = id OR Copyright Microsoft, 2001 object\_id('history') = id OR -- Purpose: Resets database options after data load object\_id('new\_order') = id OR object id('item') sp\_dboption tpcc,'select into/bulkcopy',FALSE ORDER BY lockflags asc sp\_dboption tpcc,'trunc. log on chkpt.',FALSE sp configure 'allow updates',0 USE tpcc RECONFIGURE WITH OVERRIDE GO CHECKPOINT EXEC sp\_dboption tpcc, 'auto update statistics', FALSE GO EXEC sp\_dboption tpcc, 'auto create statistics', FALSE sp\_configure 'allow updates',1 EXEC sp tableoption 'district', 'pintable',true 'pintable',true EXEC sp\_tableoption 'warehouse', RECONFIGURE WITH OVERRIDE EXEC sp tableoption 'new order', 'pintable',true EXEC sp\_tableoption 'item', 'pintable',true DECLARE varchar(50) @msg idxcuscl.sql OPTIONS FOR SQL SERVER 8.0 -- Set option values for user-defined indexes ---- File: IDXCUSCL.SQL Microsoft TPC-C Benchmark Kit Ver. 4.22 Copyright Microsoft, 2001 SET @msg -- Purpose: Creates clustered index on customer table **PRINT** @msg @msg = 'Setting SQL Server indexoptions' SET **PRINT** @msg use tpcc SET @msg go **PRINT** @msg declare @startdate datetime EXEC sp\_indexoption 'customer', 'DisAllowPageLocks', TRUE declare @enddate datetime EXEC sp indexoption 'district', 'DisAllowPageLocks', TRUE select @startdate = getdate()

EXEC sp\_indexoption

'warehouse',

'DisAllowPageLocks',

```
select "Start date:", convert(varchar(30),@startdate,9)
                                                                               select @enddate = getdate()
                                                                               select "End date: ", convert(varchar(30),@enddate,9)
if exists (select name from sysindexes where name = 'customer c1')
                                                                               select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
           drop index customer.customer_c1
create unique clustered index customer c1 on customer(c w id, c d id, c id)
           on MSSQL cs fg
                                                                               idxitmcl.sql
select @enddate = getdate()
select "End date: ", convert(varchar(30),@enddate,9)
                                                                                -- File: IDXITMCL.SOL
select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
                                                                                        Microsoft TPC-C Benchmark Kit Ver. 4.22
                                                                                        Copyright Microsoft, 2001
                                                                                -- Purpose: Creates clustered index on item table
idxcusnc.sql
                                                                               use tpcc
-- File: IDXCUSNC.SQL
         Microsoft TPC-C Benchmark Kit Ver. 4.22
                                                                               declare @startdate datetime
        Copyright Microsoft, 2001
                                                                               declare @enddate datetime
-- Purpose: Creates non-clustered index on customer table
                                                                               select @startdate = getdate()
                                                                               select "Start date:", convert(varchar(30),@startdate,9)
                                                                               if exists ( select name from sysindexes where name = 'item_c1' )
use tpcc
                                                                                          drop index item.item c1
go
declare @startdate datetime
                                                                               create unique clustered index item c1 on item(i id)
declare @enddate datetime
                                                                                          on MSSQL_misc_fg
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)
                                                                               select @enddate = getdate()
                                                                               select "End date: ", convert(varchar(30),@enddate,9)
                                                                               select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
if exists (select name from sysindexes where name = 'customer nc1')
           drop index customer_uc1
create unique nonclustered index customer nc1 on customer(c w id, c d id,
c_last, c_first, c id)
           on MSSQL_cs_fg
                                                                               idxnodcl.sql
select @enddate = getdate()
                                                                                         IDXNODCL.SQL
                                                                                -- File:
select "End date: ", convert(varchar(30),@enddate,9)
                                                                                        Microsoft TPC-C Benchmark Kit Ver. 4.22
select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
                                                                                        Copyright Microsoft, 2001
                                                                                -- Purpose: Creates clustered index on new order table
                                                                               use tpcc
idxdiscl.sql
                                                                               go
-- File: IDXDISCL.SQL
                                                                               declare @startdate datetime
         Microsoft TPC-C Benchmark Kit Ver. 4.22
                                                                               declare @enddate datetime
         Copyright Microsoft, 2001
                                                                               select @startdate = getdate()
                                                                               select "Start date:", convert(varchar(30),@startdate,9)
-- Purpose: Creates clustered index on district table
                                                                               if exists ( select name from sysindexes where name = 'new order c1')
                                                                                          drop index new_order.new_order_c1
use tpcc
go
                                                                               create unique clustered index new order c1 on new order(no w id, no d id,
declare @startdate datetime
                                                                               no_o_id)
declare @enddate datetime
                                                                                          on MSSQL misc fg
select @startdate = getdate()
                                                                               select @enddate = getdate()
select "End date: ", convert(varchar(30),@enddate,9)
select "Start date:", convert(varchar(30),@startdate,9)
if exists ( select name from sysindexes where name = 'district_c1' )
                                                                               select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
           drop index district.district c1
                                                                               go
create unique clustered index district c1 on district(d w id, d id)
```

with fillfactor=100 on MSSQL misc fg

```
idxodlcl.sql
-- File: IDXODLCL.SOL
```

Microsoft TPC-C Benchmark Kit Ver. 4.22

-- Purpose: Creates clustered index on order line table

Copyright Microsoft, 2001

```
use tpcc
declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)
if exists ( select name from sysindexes where name = 'order_line_c1' )
          drop index order_line.order_line_c1
create unique clustered index order line c1 on order line(ol w id, ol d id,
ol o id, ol number)
          on MSSQL_misc_fg
select @enddate = getdate()
select "End date: ", convert(varchar(30),@enddate,9)
select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
idxordcl.sql
-- File: IDXORDCL.SQL
        Microsoft TPC-C Benchmark Kit Ver. 4.22
        Copyright Microsoft, 2001
-- Purpose: Creates clustered index on orders table
use tpcc
go
declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)
if exists ( select name from sysindexes where name = 'orders_c1' )
          drop index orders.orders c1
create unique clustered index orders_c1 on orders(o_w_id, o_d_id, o_id)
          on MSSQL_misc_fg
select @enddate = getdate()
select "End date: ", convert(varchar(30),@enddate,9)
select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
go
idxordnc.sql
-- File: IDXORDNC.SQL
        Microsoft TPC-C Benchmark Kit Ver. 4.22
        Copyright Microsoft, 2001
-- Purpose: Creates non-clustered index on orders table
```

```
use tpcc
go
declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)
if exists (select name from sysindexes where name = 'orders nc1')
           drop index orders_orders_nc1
create index orders nc1 on orders(o w id, o d id, o c id, o id)
           on MSSQL_misc_fg
select @enddate = getdate()
select "End date: ", convert(varchar(30),@enddate,9)
select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
go
idxstkcl.sql
-- File: IDXSTKCL.SQL
         Microsoft TPC-C Benchmark Kit Ver. 4.22
         Copyright Microsoft, 2001
-- Purpose: Creates clustered index on stock table
use tpcc
declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)
```

# create unique clustered index stock\_c1 on stock(s\_i\_id, s\_w\_id) on MSSQL\_cs\_fg

if exists (select name from sysindexes where name = 'stock c1')

select @enddate = getdate() select "End date: ", convert(varchar(30),@enddate,9)

drop index stock.stock\_c1

select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)

### idxwarcl.sql

```
-- File: IDXWARCL.SQL
        Microsoft TPC-C Benchmark Kit Ver. 4.22
        Copyright Microsoft, 2001
-- Purpose: Creates clustered index on warehouse table
use tpcc
declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)
```

```
if exists (select name from sysindexes where name = 'warehouse c1')
          drop index warehouse.warehouse c1
create unique clustered index warehouse_c1 on warehouse(w_id)
                                                                              exec sp_configure "show advanced option", 1
          with fillfactor=100 on MSSQL_misc_fg
select @enddate = getdate()
                                                                              reconfigure with override
select "End date: ", convert(varchar(30),@enddate,9)
select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
                                                                              /* change this value to approximately the number of connected users */
go
                                                                              exec sp_configure "max worker threads",240
                                                                              /* increase priority of user threads */
                                                                              exec sp_configure "priority boost",1
removedb.sql
                                                                              /* disable automatic checkpointing */
-- File: REMOVEDB.SQL
                                                                              exec sp_configure "recovery interval",56
        Microsoft TPC-C Benchmark Kit Ver. 4.22
        Copyright Microsoft, 2001
                                                                              /* change to a mask appropriate for the number of processors on the server */
-- Purpose: Removes tpcc database and backup files
                                                                              exec sp configure "affinity mask",0x7
                                                                              /* enable fibers */
use master
                                                                              exec sp_configure "lightweight pooling",1
                                                                              /* enable update */
-- remove any existing database and backup files
                                                                              exec sp_configure "allow updates",1
exec sp dbremove tpcc, dropdev
                                                                              /* set max degree of parallelism */
                                                                              exec sp configure "max degree of parallelism",1
exec sp dropdevice 'tpccback1'
exec sp_dropdevice 'tpccback2'
exec sp_dropdevice 'tpccback3'
                                                                              reconfigure with override
exec sp_dropdevice 'tpccback4'
                                                                              sqlshutdown.sql
restore.sql
                                                                              use tpcc
-- File: RESTORE.SQL
        Microsoft TPC-C Benchmark Kit Ver. 4.22
                                                                              checkpoint
        Copyright Microsoft, 2001
-- Purpose: Loads database backup from backup files
                                                                              shutdown
                                                                              go
declare @startdate datetime
declare @enddate datetime
                                                                              tables.sql
select @startdate = getdate()
--select "Start date:", convert(varchar(30),@startdate,9)
                                                                              -- File: TABLES.SQL
load database tpcc from tpccback1, tpccback2, tpccback3, tpccback4 with stats
                                                                                      Microsoft TPC-C Benchmark Kit Ver. 4.22
                                                                                      Copyright Microsoft, 2001
                                                                              -- Purpose: Creates TPC-C tables
select @enddate = getdate()
--select "End date: ", convert(varchar(30),@enddate,9)
--select "Elapsed time (in seconds): ", datediff(second, @startdate, @enddate)
                                                                              use tpcc
                                                                              go
go
                                                                              -- Remove all existing TPC-C tables
RunSQLCfg.sql
                                                                              if exists ( select name from sysobjects where name = 'warehouse' )
/* TPC-C Benchmark Kit
                                                                                         drop table warehouse
  RUNSQLCFG.SQL
                                                                              if exists ( select name from sysobjects where name = 'district' )
                                                                                         drop table district
/* This script file is used to set runtime server configuration parameters */
                                                                              go
```

```
char(9),
if exists ( select name from sysobjects where name = 'customer' )
                                                                                            c_zip
           drop table customer
                                                                                            c_phone
                                                                                                                                         char(16),
                                                                                            c_since
                                                                                                                                         datetime,
if exists ( select name from sysobjects where name = 'history' )
                                                                                            c_credit
                                                                                                                              char(2),
           drop table history
                                                                                            c\_credit\_lim
                                                                                                                              numeric(12,2),
                                                                                            c discount
                                                                                                                              numeric(4,4),
if exists (select name from sysobjects where name = 'new order')
                                                                                            c balance
                                                                                                                              numeric(12,2),
           drop table new_order
                                                                                            c_ytd_payment
                                                                                                                              numeric(12,2),
                                                                                            c_payment_cnt
                                                                                                                              smallint,
                                                                                            c_delivery_cnt
if exists ( select name from sysobjects where name = 'orders' )
                                                                                                                              smallint,
           drop table orders
                                                                                            c_data
                                                                                                                                         char(500)
                                                                                 ) on MSSQL_cs_fg
if exists (select name from sysobjects where name = 'order line')
           drop table order_line
                                                                                 create table history
if exists ( select name from sysobjects where name = 'item' )
           drop table item
                                                                                            h c id
                                                                                                                                         int.
                                                                                            h_c_d_id
                                                                                                                              tinyint,
if exists ( select name from sysobjects where name = 'stock' )
                                                                                                                              smallint,
                                                                                            h_c_w_id
           drop table stock
                                                                                            h d id
                                                                                                                                         tinyint,
                                                                                                                                         smallint,
                                                                                            h_w_id
go
                                                                                            h date
                                                                                                                                         datetime,
                                                                                            h_amount
                                                                                                                              numeric(6,2),
-- Create new tables
                                                                                            h data
                                                                                                                                         char(24)
                                                                                 ) on MSSQL_misc_fg
create table warehouse
                                                                                 create table new_order
           w id
                                                       smallint,
           w_name
                                                       char(10),
                                                                                            no_o_id
                                                                                                                                         int,
           w_street 1
                                            char(20),
                                                                                            no d id
                                                                                                                                         tinvint,
           w_street_2
                                            char(20),
                                                                                            no_w_id
                                                                                                                                         smallint
                                                                                 ) on MSSQL_misc_fg
           w_city
                                                       char(20),
           w state
                                                       char(2),
           w_zip
                                                       char(9),
                                                       numeric(4,4),
                                                                                 create table orders
           w_tax
           w_ytd
                                                       numeric(12,2)
) on MSSQL misc fg
                                                                                            o id
                                                                                                                                         int,
                                                                                            o_d_id
                                                                                                                                         tinyint,
                                                                                            o_w_id
                                                                                                                                         smallint,
create table district
                                                                                            o c id
                                                                                            o_entry_d
                                                                                                                              datetime.
           d id
                                                                                            o carrier id
                                                                                                                              tinyint,
                                                       tinyint,
           d_w_id
                                                                                                                              tinyint,
                                                       smallint,
                                                                                            o_ol_cnt
           d name
                                                       char(10),
                                                                                            o all local
                                                                                                                              tinyint
           d_street_1
                                            char(20),
                                                                                 ) on MSSQL_misc_fg
           d street 2
                                            char(20),
           d city
                                                       char(20),
           d_state
                                                       char(2),
                                                                                 create table order_line
           d zip
                                                       char(9),
           d_tax
                                                       numeric(4,4),
                                                                                            ol_o_id
                                                                                                                                         int,
                                                                                            ol d id
           d ytd
                                                       numeric(12,2),
                                                                                                                                         tinyint,
                                                                                                                                         smallint,
           d_next_o_id
                                                       int
                                                                                            ol_w_id
) on MSSQL_misc_fg
                                                                                            ol_number
                                                                                                                              tinyint,
                                                                                            ol i id
                                                                                                                                         int,
                                                                                            ol_supply_w_id
                                                                                                                              smallint,
create table customer
                                                                                            ol delivery d
                                                                                                                              datetime,
                                                                                            ol_quantity
                                                                                                                                         smallint,
           c id
                                                       int,
                                                                                            ol amount
                                                                                                                              numeric(6,2),
           c_d_id
                                                       tinyint,
                                                                                            ol_dist_info
                                                                                                                              char(24)
           c_w_id
                                                       smallint,
                                                                                 ) on MSSQL_misc_fg
           c first
                                                       char(16),
           c_middle
                                            char(2),
           c_last
                                                       char(16),
                                                                                 create table item
           c_street_1
                                            char(20),
           c street 2
                                            char(20),
                                                                                            i id
                                                                                                                                         int,
                                                       char(20),
           c_city
                                                                                            i_im_id
                                                                                                                                         int,
           c_state
                                                       char(2),
                                                                                            i name
                                                                                                                                         char(24),
```

```
i_price
                                                  numeric(5,2),
                                                                         go
          i_data
                                                  char(50)
                                                                         print
) on MSSQL_misc_fg
                                                                                   'CUSTOMER TABLE = (30,000 * No of warehouses)'
                                                                         select
                                                                                   rows
create table stock
                                                                         from
                                                                                   sysindexes
                                                                                             =object_id("customer")
                                                                         where
                                                                                   id
          s i id
                                                  int.
          s_w_id
                                                  smallint,
                                                                         print 'ORDERS TABLE = (30,000 * No of warehouses)'
                                        smallint,
          s_quantity
          s_dist_01
                                        char(24),
          s_dist_02
                                        char(24),
                                                                         select
                                                                                   rows
          s dist 03
                                        char(24),
                                                                         from
                                                                                   sysindexes
          s_dist_04
                                        char(24),
                                                                         where
                                                                                             =object_id("orders")
                                                                                   id
          s dist 05
                                        char(24),
                                                                         go
          s_dist_06
                                        char(24),
                                                                         print
                                                                                   'HISTORY TABLE = (30,000 * No of warehouses)'
          s dist 07
                                        char(24),
          s_dist_08
                                        char(24),
          s_dist 09
                                        char(24),
                                                                         select
          s dist 10
                                        char(24),
                                                                         from
                                                                                   sysindexes
          s_ytd
                                                                         where
                                                                                             =object_id("history")
                                                  int.
          s order cnt
                                                  smallint,
                                                                         go
          s_remote_cnt
                                        smallint,
                                                                         print
                                                                                   'STOCK TABLE = (100,000 * No of warehouses)'
                                                  char(50)
          s data
) on MSSQL_cs_fg
                                                                         select
                                                                         from
                                                                                   sysindexes
                                                                                             =object_id("stock")
                                                                                   id
                                                                         where
Verify_TpccLoad.sql
                                                                         go
                                                                         print
                                                                                   'ORDER LINE TABLE = (300,000 * No of warehouses + some
-- File: VERIFYTPCCLOAD.SQL
                                                                         change)'
        Microsoft TPC-C Benchmark Kit Ver. 4.22
        Copyright Microsoft, 2001
                                                                         select
                                                                                   rows
-- Purpose: Performs series of TPCC database checks to verify
                                                                         from
                                                                                   sysindexes
             that database load completed correctly
                                                                         where
                                                                                             =object id("order line")
                                                                         go
print
          convert(char(30), getdate(),9)
select
                                                                                   'NEW_ORDER TABLE = (9000 * No of warehouses)'
                                                                         print
print
                                                                         select
                                                                                   rows
use tpcc
                                                                         from
                                                                                   sysindexes
go
                                                                                             =object_id("new_order")
                                                                         where
                                                                         go
          ***********
                                                                                    ******
          Check rows per table from SYSINDEXES
                                                                                   Check indices
          ***********
                                                                                   ******
print
          'WAREHOUSE TABLE'
                                                                         print '***********Index Check************
          rows
select
from
          sysindexes
                                                                         use tpcc
                    = object_id("warehouse")
where
go
                                                                         sp_helpindex
                                                                                             customer
print
          'DISTRICT TABLE = (10 * No of warehouses)'
select
          rows
                                                                         sp_helpindex
                                                                                             stock
from
          sysindexes
                                                                         go
                    =object_id("district")
where
go
                                                                         sp_helpindex
                                                                                             district
                                                                         go
          'ITEM TABLE = 100,000'
print
                                                                         sp_helpindex
                                                                                             item
select
          rows
                                                                         go
from
          sysindexes
          id
                    =object_id("item")
where
```

```
sp_helpindex go

sp_helpindex go

sp_helpindex go

sp_helpindex go

sp_helpindex warehouse go
```

### version.sql

-- File: VERSION.SQL

```
Microsoft TPC-C Benchmark Kit Ver. 4.22
         Copyright Microsoft, 2001
-- Purpose: Returns version level of TPC-C stored procs
-- Note: Always update the return value of this proc for
         any interface changes or "must have" bug fixes.
-- The value returned by this SP defines the "interface level",
-- which must match between the stored procs and the client code.
-- The interface level may be down rev from the current kit. This
-- indicates that the interface hasn't changed since that version.
use tpcc
go
if exists ( select name from sysobjects where name = "tpcc version" )
           drop procedure tpcc version
create proc tpcc_version
declare
           @version char(8)
begin
           select @version = "4.10.000"
           select @version as "Version"
end
go
```

### **Load Source Code**

### getargs.c

```
void GetArgsLoader(int argc, char **argv, TPCCLDR_ARGS *pargs)
  int
  char
          *ptr;
#ifdef DEBUG
  printf("[%ld]DBG: Entering GetArgsLoader()\n", (int)
GetCurrentThreadId());
#endif
  /* init args struct with some useful values */
  pargs->server
                              = SERVER;
  pargs->user
                              = USER;
                                        = PASSWORD;
  pargs->password
  pargs->database
                                        = DATABASE;
  pargs->batch
                              = BATCH;
  pargs->num warehouses
                                        = UNDEF;
         pargs->tables_all
                                                  = TRUE;
          pargs->table item
                                                  = FALSE;
          pargs->table warehouse
                                                  = FALSE;
         pargs->table customer
                                                  = FALSE;
          pargs->table_orders
                                                  = FALSE;
          pargs->loader_res_file
LOADER RES FILE;
          pargs->pack_size
                                        = DEFLDPACKSIZE;
          pargs->starting warehouse
DEF_STARTING_WAREHOUSE;
          pargs->build index
                                                  = BUILD INDEX;
                                                  = INDEX_ORDER;
          pargs->index_order
         pargs->index_script_path
                                        = INDEX_SCRIPT_PATH;
         pargs->scale down
                                                  = SCALE DOWN;
  /* check for zero command line args */
  if ( argc == 1 )
                    GetArgsLoaderUsage();
  for (i = 1; i < argc; ++i)
                    if (argv[i][0] != '-' && argv[i][0] != '/')
                    printf("\nUnrecognized command");
                    GetArgsLoaderUsage();
                    exit(1);
                    ptr = argv[i];
                    switch (ptr[1])
                    case 'h': /* Fall throught */
                    case 'H':
                                        GetArgsLoaderUsage();
                                        break;
                    case 'D'
                                        pargs->database = ptr+2;
                                        break;
                    case 'P':
                                        pargs->password = ptr+2;
                                        break;
                    case 'S':
                                        pargs->server = ptr+2;
```

```
break;
                     case 'U':
                                           pargs->user = ptr+2;
                                                                                                   case 'd':
                                           break;
                                                                                                                         pargs->index_script_path = ptr+2;
                                                                                                                         break:
                     case 'b':
                                                                                                   default:
                                           pargs->batch = atol(ptr+2);
                                           break;
                                                                                                              GetArgsLoaderUsage();
                                                                                                              exit(-1);
                     case 'W':
                                                                                                              break;
                                           pargs->num_warehouses =
atol(ptr+2);
                                           break;
                                                                                 /* check for required args */
                                                                                 if (pargs->num_warehouses == UNDEF)
                     case 's':
                                           pargs->starting_warehouse =
atol(ptr+2);
                                                                                                   printf("Number of Warehouses is required\n");
                                          break;
                                                                                                   exit(-2);
                     case 't':
                                                                                 return;
                                                     pargs->tables all =
FALSE;
                                                     if (strcmp(ptr+2,"item")
== 0)
pargs->table item = TRUE;
                                                     else if
                                                                              // Function name: GetArgsLoaderUsage
(strcmp(ptr+2,"warehouse") == 0)
pargs->table warehouse = TRUE;
                                                     else if
(strcmp(ptr+2,"customer") == 0)
                                                                              void GetArgsLoaderUsage()
pargs->table_customer = TRUE;
                                                     else if
                                                                              #ifdef DEBUG
                                                                                 printf("[%ld]DBG: Entering GetArgsLoaderUsage()\n", (int)
(strcmp(ptr+2,"orders") == 0)
                                                                              GetCurrentThreadId());
pargs->table_orders = TRUE;
                                                                              #endif
                                                     else
                                                                                 printf("TPCCLDR:\n\n");
                                                     printf("\nUnrecognized
command");
                                                                                         printf("Parameter
                                                                                                                                    Default\n");
                                                                                         printf("-----
                                                     GetArgsLoaderUsage();
                                                                                                                                       ----\n");
                                                                                                                                       Required \n");
                                                     exit(1);
                                                                                 printf("-W Number of Warehouses to Load
                                                                                 printf("-S Server
                                                                                                                           %s\n", SERVER);
                                                                                 printf("-U Username
                                                                                                                              %s\n", USER);
                                                     break;
                                                                                 printf("-P Password
                                                                                                                             %s\n", PASSWORD);
                                                                                                                             %s\n", DATABASE);
                                                                                 printf("-D Database
                                          }
                                                                                         printf("-b Batch Size
                                                                                                                                     %ld\n", (long)
                                case 'f':
                                                                              BATCH);
                                                                                                                                       %ld\n", (long)
                                                                                         printf("-p TDS packet size
                                          pargs->loader res file = ptr+2;
                                                                              DEFLDPACKSIZE);
                                          break;
                                                                                         printf("-f Loader Results Output Filename
                                                                                                                                             %s\n",
                                                                              LOADER_RES_FILE);
                                case 'p':
                                                                                         printf("-s Starting Warehouse
                                           pargs->pack_size = atol(ptr+2);
                                                                                                                                         %ld\n", (long)
                                                                              DEF STARTING WAREHOUSE);
                                           break;
                                                                                         printf("-i Build Option (data = 0, data and index = 1)
                                                                                                                                                %ld\n"
                                case 'i':
                                                                              (long) BUILD INDEX);
                                           pargs->build_index = atol(ptr+2);
                                                                                         printf("-o Cluster Index Build Order (before = 1, after = 0) %ld\n",
                                                                              (long) INDEX ORDER);
                                           break:
                                                                                         printf("-c Build Scaled Database (normal = 0, tiny = 1)
                                                                                                                                                 %ld\n",
                                                                              (long) SCALE_DOWN);
                                case 'o':
                                           pargs->index_order = atol(ptr+2);
                                                                                         printf("-d Index Script Path
                                                                                                                                       %s\n",
                                                                              INDEX_SCRIPT_PATH);
                                          break:
                                                                                         printf("-t Table to Load
                                                                                                                                      all tables \n");
                                case 'c':
                                                                                 printf(" [item|warehouse|customer|orders]\n");
                                          pargs->scale_down = atol(ptr+2);
                                                                                 printf(" Notes: \n");
```

```
printf("
            - the '-t' parameter may be included multiple times to \n");
                                                                              printf("[%ld]DBG: Entering seed()...\n", (int) GetCurrentThreadId());
  printf("
             specify multiple tables to be loaded \n");
                                                                                      printf("Old Seed %ld New Seed %ld\n", Seed, val);
  printf("
            - 'item' loads ITEM table \n");
                                                                            #endif
            - 'warehouse' loads WAREHOUSE, DISTRICT, and STOCK
  printf("
                                                                              if (val < 0)
tables \n");
  printf("
            - 'customer' loads CUSTOMER and HISTORY tables \n");
                                                                                        val = abs(val);
            - 'orders' load NEW-ORDER, ORDERS, ORDER-LINE tables
  printf("
                                                                              Seed = val;
          printf("\nNote: Command line switches are case sensitive.\n");
  exit(0);
                                                                             irand - returns a 32 bit integer pseudo random number with a period of *
random.c
                                                                                 1 to 2 ^ 32 - 1.
                               RANDOM.C
                                                                            * parameters:
                                         Microsoft TPC-C Kit Ver. 4.22
//
                                                                                 none.
//
                                         Copyright Microsoft, 1996, 1997,
1998, 1999, 2000, 2001
          Purpose: Random number generation routines for database loader
                                                                                 32 bit integer - defined as long ( see above ).
                                                                            * side effects:
// Includes
                                                                                seed get recomputed.
#include "tpcc.h"
#include "math.h"
// Defines
                                                                            long irand()
#define A
                16807
#define M
             2147483647
                                                                              register long s; /* copy of seed */
               127773 /* M div A */
#define Q
                                                                              register long test; /* test flag */
                2836 /* M mod A */
#define R
                                                                              register long hi; /* tmp value for speed */
                    __declspec(thread)
#define Thread
                                                                              register long lo; /* tmp value for speed */
// Globals
                                                                            #ifdef DEBUG
          Thread Seed = 0; /* thread local seed */
                                                                              printf("[%ld]DBG: Entering irand()...\n", (int) GetCurrentThreadId());
                                                                              s = Seed;
                                                                              hi = s / Q;
* random -
                                                                              lo = s \% Q;
     Implements a GOOD pseudo random number generator. This generator
                                                                              test = A * lo - R * hi;
     will/should? run the complete period before repeating.
                                                                              if (test > 0)
                                                                                                Seed = test;
* Copied from:
     Random Numbers Generators: Good Ones Are Hard to Find.
                                                                                                Seed = test + M;
     Communications of the ACM - October 1988 Volume 31 Number 10
                                                                              return( Seed );
* Machine Dependencies:
     long must be 2 ^ 31 - 1 or greater.
                                                                                               **************
                                                                            * drand - returns a double pseudo random number between 0.0 and 1.0.
/********************
* seed - load the Seed value used in irand and drand. Should be used before *
                                                                            *******
     first call to irand or drand.
                                                                            double drand()
                                                                            #ifdef DEBUG
void seed(long val)
                                                                              printf("[%ld]DBG: Entering drand()...\n", (int) GetCurrentThreadId());
#ifdef DEBUG
```

```
(int) GetCurrentThreadId(), lower,
  return( (double)irand() / 2147483647.0);
                                                                             upper, rand_num);
                                                                             #endif
                                                                               return rand num;
// Function : RandomNumber
                                                                             #endif
// Description:
long RandomNumber(long lower, long upper)
                                                                             // Function : NURand
  long rand_num;
                                                                             // Description:
#ifdef DEBUG
  printf("[%ld]DBG: Entering RandomNumber()...\n", (int)
                                                                             long NURand(int iConst,
GetCurrentThreadId());
                                                                                          long x,
#endif
                                                                                          long y
                                                                                          long C)
          if (upper == lower) /* pgd 08-13-96 perf enhancement */
                                                                               long rand num;
                    return lower;
          upper++;
                                                                             #ifdef DEBUG
                                                                               printf("[%ld]DBG: Entering NURand()...\n", (int) GetCurrentThreadId());
  if ( upper <= lower )
                    rand num = upper;
                                                                               rand_num = (((RandomNumber(0,iConst) | RandomNumber(x,y)) + C) %
  else
                    rand num = lower + irand() % (upper - lower); /* pgd
                                                                             (y-x+1)+x;
08-13-96 perf enhancement */
                                                                               printf("[%ld]DBG: NURand: num = %d\n", (int) GetCurrentThreadId(),
#ifdef DEBUG
                                                                             rand num);
  printf("[%ld]DBG: RandomNumber between %ld & %ld ==> %ld\n",
                                                                             #endif
                                         (int) GetCurrentThreadId(), lower,
upper, rand_num);
                                                                               return rand num;
#endif
  return rand num:
                                                                             strings.c
                                                                                                             STRINGS.C
                                                                                        File:
                                                                                                                       Microsoft TPC-C Kit Ver. 4.22
#if 0
                                                                                                                       Copyright Microsoft, 1996, 1997,
                                                                             1998, 1999, 2000, 2001
//Orginal code pgd 08/13/96
                                                                                        Purpose: Source file for database loader string functions
long RandomNumber(long lower,
                                           long upper)
                                                                             // Includes
                                                                             #include "tpcc.h"
  long rand_num;
                                                                             #include <string.h>
                                                                             #include <ctype.h>
#ifdef DEBUG
  printf("[%ld]DBG: Entering RandomNumber()...\n", (int)
GetCurrentThreadId());
#endif
                                                                             // Function name: MakeAddress
          upper++;
  if ((upper <= lower))
                    rand num = upper;
  else
                                                                             void MakeAddress(char *street 1,
                    rand_num = lower + irand() % ((upper > lower) ? upper -
                                                                                                                        char *street 2,
lower: upper);
                                                                                                                        char *city,
                                                                                                                        char *state,
                                                                                                                        char *zip)
#ifdef DEBUG
  printf("[%ld]DBG: RandomNumber between %ld & %ld ==> %ld\n",
```

```
#ifdef DEBUG
  printf("[%ld]DBG: Entering MakeAddress()\n", (int) GetCurrentThreadId());
  MakeAlphaString (10, 20, ADDRESS LEN, street 1);
  MakeAlphaString (10, 20, ADDRESS LEN, street 2);
  MakeAlphaString (10, 20, ADDRESS_LEN, city);
  MakeAlphaString (2, 2, STATE_LEN, state);
  MakeZipNumberString(9, 9, ZIP_LEN, zip);
#ifdef DEBUG
  printf("[%ld]DBG: MakeAddress: street_1: %s, street_2: %s, city: %s, state:
%s, zip: %s\n",
                                (int) GetCurrentThreadId(), street_1, street_2,
city, state, zip);
#endif
  return;
// Function name: LastName
void LastName(int num,
                         char *name)
  static char *n[] =
                     "BAR", "OUGHT", "ABLE", "PRI", "PRES", "ESE", "ANTI", "CALLY", "ATION", "EING"
  };
#ifdef DEBUG
  printf("[%ld]DBG: Entering LastName()\n", (int) GetCurrentThreadId());
#endif
  if ((num \ge 0) && (num < 1000))
                     strcpy(name, n[(num/100)%10]);
                     strcat(name, n[(num/10)%10]);
                     strcat(name, n[(num/1)\%10]);
                     if (strlen(name) < LAST NAME LEN)
                                PaddString(LAST NAME LEN, name);
  else
                     printf("\nError in LastName()... num <%ld> out of range
(0,999)\n", num);
                     exit(-1);
#ifdef DEBUG
  printf("[%ld]DBG: LastName: num = [%d] ==> [%d][%d][%d]\n",
                                (int) GetCurrentThreadId(), num, num/100,
(num/10)%10, num%10);
```

```
printf("[%ld]DBG: LastName: String = %s\n", (int)
GetCurrentThreadId(), name);
#endif
  return:
// Function name: MakeAlphaString
//philipdu 08/13/96 Changed MakeAlphaString to use A-Z, a-z, and 0-9 in
//accordance with spec see below:
//The spec says:
//4.3.2.2 The notation random a-string [x .. y]
//(respectively, n-string [x .. y]) represents a string of random alphanumeric
//(respectively, numeric) characters of a random length of minimum x,
maximum v.
//and mean (y+x)/2. Alphanumerics are A..Z, a..z, and 0..9. The only other
//requirement is that the character set used "must be able to represent a
minimum
//of 128 different characters". We are using 8-bit chars, so this is a non issue.
//It is completely unreasonable to stuff non-printing chars into the text fields.
//-CLevine 08/13/96
int MakeAlphaString( int x, int y, int z, char *str)
                                 len:
           int
                                 i;
  char cc = 'a';
           static
                      char chArray[] =
"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstu
vwxyz";
                                 chArrayMax = 61;
           static
                      int
#ifdef DEBUG
  printf("[%ld]DBG: Entering MakeAlphaString()\n", (int)
GetCurrentThreadId());
#endif
           len = RandomNumber(x, y)
           for (i=0; i<len; i++)
           {
                      cc = chArray[RandomNumber(0, chArrayMax)];
     str[i] = cc;
           if (len < z)
                      memset(str+len, '', z - len);
           str[len] = 0;
  return len:
// Function name: MakeOriginalAlphaString
```

```
itoa(RandomNumber(0, 9999999), tmp, 10);
int MakeOriginalAlphaString(int x,
                                                                                            memcpy(str, tmp, strlen(tmp));
                                                                    int y,
                                                                                            itoa(RandomNumber(0, 99999999), tmp, 10);
                                                                                           memcpy(str+8, tmp, strlen(tmp));
int z,
                                                                    char *str,
                                                                  int percent)
                                                                                           str[16] = 0;
  int
                      len;
                                                                                   return 16;
                      val;
  int
  int
                      start;
#ifdef DEBUG
  printf("[%ld]DBG: Entering MakeOriginalAlphaString()\n", (int)
GetCurrentThreadId());
#endif
                                                                                 // Function name: MakeZipNumberString
  // verify prercentage is valid
  if ((percent < 0) || (percent > 100))
                                                                                 int MakeZipNumberString(int x, int y, int z, char *str)
                      printf("MakeOrigianlAlphaString: Invalid percentage:
                                                                                            char tmp[16];
%d\n", percent);
                      exit(-1);
                                                                                           //MakeZipNumberString is always called MakeZipNumberString(9,
                                                                                 9, 9, string)
  // verify string is at least 8 chars in length
  if ((x + y) \le 8)
                                                                                            strcpy(str, "000011111");
                      printf("MakeOriginalAlphaString: string length must be
                                                                                            itoa(RandomNumber(0, 9999), tmp, 10);
>= 8\n");
                                                                                           memcpy(str, tmp, strlen(tmp));
                      exit(-1);
                                                                                   return 9;
  // Make Alpha String
  len = MakeAlphaString(x,y, z, str);
  val = RandomNumber(1,100);
  if (val <= percent)
                                                                                 // Function name: InitString
                      start = RandomNumber(0, len - 8);
                      strncpy(str + start, "ORIGINAL", 8);
                                                                                 void InitString(char *str, int len)
#ifdef DEBUG
                                                                                 #ifdef DEBUG
  printf("[%ld]DBG: MakeOriginalAlphaString: : %s\n",
                                                                                   printf("[%ld]DBG: Entering InitString()\n", (int) GetCurrentThreadId());
                                 (int) GetCurrentThreadId(), str);
                                                                                           memset(str, ' ', len);
  return strlen(str);
                                                                                   str[len] = 0;
                                                                                 // Function name: InitAddress
// Function name: MakeNumberString
//
                                                                                 // Description:
int MakeNumberString(int x, int y, int z, char *str)
           char tmp[16];
                                                                                 void InitAddress(char *street_1, char *street_2, char *city, char *state, char
                                                                                 *zip)
           //MakeNumberString is always called MakeZipNumberString(16,
16, 16, string)
                                                                                           memset(street 1, '', ADDRESS LEN+1);
                                                                                           memset(street_2, '', ADDRESS_LEN+1);
           memset(str, '0', 16);
                                                                                           memset(city, '', ADDRESS_LEN+1);
```

```
street 1[ADDRESS LEN+1] = 0;
                                                                             time_now = ((el_time.time - start_sec) * 1000) + el_time.millitm;
  street_2[ADDRESS_LEN+1] = 0;
  city[ADDRESS\_LEN+1] = 0;
                                                                             return time_now;
          memset(state, '', STATE LEN+1);
  state[STATE LEN+1] = 0;
                                                                           tpcc.h
          memset(zip, '', ZIP_LEN+1);
  zip[ZIP LEN+1] = 0;
                                                                                                          TPCC.H
                                                                                     File:
                                                                                                                    Microsoft TPC-C Kit Ver. 4.22
                                                                                                                    Copyright Microsoft, 1996, 1997,
                                                                           1998, 1999, 2000, 2001
                                                                                     Purpose: Header file for TPC-C database loader
//
// Function name: PaddString
                                                                           // Build number of TPC Benchmark Kit
                                                                           #define TPCKIT_VER
                                                                           // General headers
                                                                           #include <windows.h>
void PaddString(int max, char *name)
                                                                           #include <winbase.h>
                                                                           #include <stdlib.h>
          int
                              len:
                                                                           #include <stdio.h>
                                                                           #include cess.h>
          len = strlen(name);
                                                                           #include <stddef.h>
          if (len < max)
                                                                           #include <stdarg.h>
                    memset(name+len, '', max - len);
                                                                           #include <string.h>
          name[max] = 0;
                                                                           #include <time.h>
                                                                           #include <sys\timeb.h>
          return;
                                                                           #include <sys\types.h>
                                                                           // ODBC headers
                                                                           #include <sql.h>
time.c
                                                                           #include <sqlext.h>
                                                                           #include <odbcss.h>
//
          File:
                              TIME.C
                                         Microsoft TPC-C Kit Ver. 4.22
//
                                                                           // General constants
                                        Copyright Microsoft, 1996, 1997,
                                                                           #define MILLI
                                                                                                          1000
1998, 1999, 2000, 2001
                                                                           #define FALSE
                                                                                                                              0
                                                                           #define TRUE
          Purpose: Source file for time functions
                                                                           #define UNDEF
                                                                                                                                          -1
                                                                           #define MINPRINTASCII
                                                                                                                                32
// Includes
                                                                           #define MAXPRINTASCII
                                                                                                                               126
#include "tpcc.h"
                                                                           // Default environment constants
// Globals
                                                                           #define SERVER
                                                                                                                              "tpcc"
static long start sec;
                                                                           #define DATABASE
                                                                           #define USER
                                                                                                                    "sa"
                                                                           #define PASSWORD
                                                                           // Default loader arguments
                                                                           #define BATCH
                                                                                                                    10000
                                                                           #define DEFLDPACKSIZE
// Function name: TimeNow
                                                                                                                              32768
                                                                           #define LOADER RES FILE
                                                                                                                     "logs\\load.out"
                                                                           #define LOADER NURAND C
                                                                                                                               123
                                                                           #define DEF_STARTING_WAREHOUSE
                                                                                                                              1
                                                                           #define BUILD_INDEX
                                                                                                                                                   1
long TimeNow()
                                                                           // build both data and indexes
                                                                           #define INDEX_ORDER
                    time now;
                                                                           // build indexes before load
 long
                                                                           #define SCALE DOWN
 struct
         timeb el time;
                                                                                                                                                   0
                                                                            // build a normal scale database
#ifdef DEBUG
                                                                           #define INDEX_SCRIPT_PATH "scripts"
  printf("[%ld]DBG: Entering TimeNow()\n", (int) GetCurrentThreadId());
                                                                           typedef struct
#endif
 _ftime(&el_time);
                                                                             char
                                                                                                                    *server:
```

```
*database;
  char
                                                                        short
                                                                                  WURand();
  char
                                       *user;
                                                                        long
                                                                                  RandomNumber(long lower, long upper);
  char
                                        *password:
                                                                        // Functions in getargs.c;
          BOOL
                                                 tables_all;
// set if loading all tables
                                                                                  GetArgsLoader();
                                                                        void
          BOOL
                                                                                  GetArgsLoaderUsage();
                                                 table item;
                                                                        void
// set if loading ITEM table specifically
         BOOL
                                                 table warehouse;
                                                                        // Functions in time.c
set if loading WAREHOUSE, DISTRICT, and STOCK
                                                                        long
                                                                                  TimeNow();
         BOOL
                                                 table customer;
// set if loading CUSTOMER and HISTORY
                                                                        // Functions in strings.c
         BOOL
                                                                                  MakeAddress();
                                                 table orders;
                                                                        void
// set if loading NEW-ORDER, ORDERS, ORDER-LINE
                                                                        void
                                                                                  LastName();
                                                                                  MakeAlphaString();
                                       num_warehouses;
                                                                        int
                                       batch;
                                                                                  MakeOriginalAlphaString();
  long
                                                                        int
                                                                                  MakeNumberString();
  long
                                       verbose;
                                                                        int
         long
                                                 pack size:
                                                                        int
                                                                                  MakeZipNumberString();
          char
                                                 *loader res file;
                                                                                  InitString();
                                                                        void
                                                 *synch servername;
                                                                                  InitAddress();
         char
                                                                        void
                                                 case sensitivity;
                                                                                  PaddString();
          long
                                                                        void
                                                 starting_warehouse;
          long
                                                 build index;
          long
          long
                                                 index_order;
                                                                        tpccldr.c
                                                 scale down;
         long
          char
                                                 *index_script_path;
                                                                                  File:
                                                                                                      TPCCLDR.C
} TPCCLDR_ARGS;
                                                                                                               Microsoft TPC-C Kit Ver. 4.22
                                                                        //
                                                                                                               Copyright Microsoft, 2000, 2001
// String length constants
                                                                        //
                                                                                  Purpose: Source file for TPC-C database loader
         #define SERVER NAME LEN
                                            20
          #define DATABASE_NAME_LEN
                                              20
         #define USER NAME LEN
                                           20
                                                                        // Includes
          #define PASSWORD LEN
                                          20
                                                                        #include "tpcc.h"
          #define TABLE NAME LEN
                                           20
                                                                        #include "search.h"
          #define I DATA LEN
                                       50
          #define I_NAME_LEN
                                       24
                                                                        // Defines
          #define BRAND LEN
                                        1
                                                                        #define MAXITEMS
                                                                                                    100000
          #define LAST_NAME_LEN
                                          16
                                                                        #define MAXITEMS SCALE DOWN
                                                                                                                         100
          #define W NAME LEN
                                         10
                                                                        #define CUSTOMERS PER DISTRICT 3000
          #define ADDRESS_LEN
                                        2.0
                                                                        #define CUSTOMERS SCALE DOWN
          #define STATE LEN
                                       2
                                                                        #define DISTRICT_PER_WAREHOUSE 10
         #define ZIP LEN
                                                                        #define ORDERS_PER_DISTRICT #define ORDERS_SCALE_DOWN
          #define S DIST LEN
                                      24
          #define S DATA LEN
                                        50
                                                                        #define MAX CUSTOMER THREADS 2
          #define D_NAME_LEN
                                        10
                                                                        #define MAX_ORDER_THREADS
          #define FIRST NAME LEN
                                                                        #define MAX_MAIN_THREADS
          #define MIDDLE_NAME_LEN
          #define PHONE LEN
                                       16
                                                                        // Functions declarations
         #define CREDIT LEN
          #define C_DATA_LEN
                                       500
                                                                        void HandleErrorDBC (SQLHDBC hdbc1);
         #define H DATA LEN
                                        24
         #define DIST_INFO_LEN
                                        24
                                                                        void CheckSQL();
          #define MAX OL NEW ORDER ITEMS
                                                                        void CheckDataBase();
          #define MAX_OL_ORDER_STATUS_ITEMS 15
          #define STATUS_LEN
                                       25
                                                                        long NURand();
          #define OL DIST INFO LEN
                                                  24
                                                                        void LoadItem();
          #define C_SINCE_LEN
                                                                        void LoadWarehouse();
23
          #define H_DATE_LEN
                                                                        void Stock();
23
                                                                        void District();
          #define OL_DELIVERY_D_LEN
                                                            23
          #define O_ENTRY_D_LEN
                                          23
                                                                        void LoadCustomer();
                                                                        void CustomerBufInit();
                                                                        void CustomerBufLoad();
// Functions in random.c
                                                                        void LoadCustomerTable();
void
          seed();
                                                                        void LoadHistoryTable();
long
          irand();
double
          drand();
                                                                        void LoadOrders();
void
         WUCreate();
                                                                       void OrdersBufInit();
```

```
void OrdersBufLoad();
                                                                        typedef struct
void LoadOrdersTable();
void LoadNewOrderTable();
                                                                                  char
void LoadOrderLineTable();
                                                                        c_last[LAST_NAME_LEN+1];
void GetPermutation():
                                                                                  char
void CheckForCommit();
                                                                        c first[FIRST NAME LEN+1];
void OpenConnections();
                                                                                                                c_id;
void BuildIndex();
                                                                        } CUSTOMER_SORT_STRUCT;
void FormatDate ();
                                                                        typedef struct
// Shared memory structures
                                                                                       time start;
                                                                          long
typedef struct
                                                                        } LOADER TIME STRUCT;
  long
              ol;
                                                                        // Global variables
  long
              ol_i_id;
  short
              ol_supply_w_id;
  short
              ol_quantity;
                                                                        char
                                                                                  szLastError[300];
  double
               ol amount;
              ol dist info[DIST INFO LEN+1];
                                                                        HENV
  char
                                                                                  henv:
         char
ol delivery d[OL DELIVERY D LEN+1];
                                                                        HDBC
                                                                                  v hdbc;
                                                                                                                                             //
} ORDER_LINE_STRUCT;
                                                                        for SQL Server version verification
                                                                        HDBC
                                                                                                                                    // for ITEM
                                                                                  i hdbc1;
typedef struct
                                                                        table
                                                                        HDBC
                                                                                                                                    // for
                                                                                  w hdbc1;
                                                                        WAREHOUSE, DISTRICT, STOCK
              o id;
  long
              o_d_id;
                                                                        HDBC
                                                                                                                                   // for
  short
                                                                                  c_hdbc1;
  short
              o w id;
                                                                        CUSTOMER
                                                                        HDBC
  long
              o_c_id;
                                                                                  c_hdbc2;
                                                                                                                                    // for
  short
              o carrier id;
                                                                        HISTORY
  short
              o_ol_cnt;
                                                                        HDBC
                                                                                  o_hdbc1;
                                                                                                                                    // for
              o all local;
                                                                        ORDERS
  short
          ORDER LINE STRUCT o ol[15];
                                                                        HDBC
                                                                                  o hdbc2;
                                                                                                                                    // for
} ORDERS_STRUCT;
                                                                        NEW-ORDER
                                                                        HDBC
                                                                                  o hdbc3;
                                                                                                                                    // for
                                                                        ORDER-LINE
typedef struct
                                                                        HSTMT v_hstmt;
                                                                                                                                    // for SQL
  long
                                       c_id;
                                                                        Server version verification
  short
                                       c_d_id;
                                       c w id;
                                                                        HSTMT
                                                                                 i hstmt1;
                                                                        HSTMT
          char
                                                                                 w hstmt1:
c first[FIRST NAME LEN+1];
                                                                        HSTMT
                                                                                  c hstmt1, c hstmt2;
                                                                        HSTMT o_hstmt1, o_hstmt2, o_hstmt3;
  char
c middle[MIDDLE NAME LEN+1];
                                       c_last[LAST_NAME_LEN+1];
                                                                        ORDERS_STRUCT orders_buf[ORDERS_PER_DISTRICT];
  char
  char
                                       c street 1[ADDRESS LEN+1];
                                                                        CUSTOMER_STRUCT customer_buf[CUSTOMERS_PER_DISTRICT];
  char
                                       c street 2[ADDRESS LEN+1];
                                                                                  orders rows loaded;
                                       c_city[ADDRESS_LEN+1];
                                                                                  new_order_rows_loaded;
  char
                                                                        long
                                       c state[STATE LEN+1];
                                                                                  order line rows loaded;
  char
                                                                        long
                                       c_zip[ZIP_LEN+1];
                                                                                  history_rows_loaded;
  char
                                                                        long
                                       c phone[PHONE LEN+1];
                                                                                  customer rows loaded;
  char
                                                                        long
                                       c_credit[CREDIT_LEN+1];
                                                                                  stock_rows_loaded;
  char
                                                                        long
                                       c credit lim;
  double
                                                                                   district rows loaded;
                                                                        long
  double
                                       c discount;
                                                                        long
                                                                                  item rows loaded;
// fix to avoid ODBC float to numeric conversion problem.
                                                                                  warehouse_rows_loaded;
                                                                        long
// double
                                                                                  main time start;
                                       c balance;
                                                                        long
         char
                                                 c_balance[6];
                                                                        long
                                                                                  main_time_end;
                                                                        long
                                                                                                      max items;
  double
                                       c_ytd_payment;
                                                                        long
                                                                                                      customers_per_district;
          short
                                                 c payment cnt;
                                                                                                      orders per district;
                                                                        long
          short
                                                 c_delivery_cnt;
                                                                        long
                                                                                                      first_new_order;
                                                                                                      last_new_order;
         char
                                                                        long
c_data[C_DATA_LEN+1];
          double
                                                 h amount;
                                       h data[H DATA LEN+1];
                                                                        TPCCLDR ARGS *aptr, args;
} CUSTOMER_STRUCT;
```

```
//
// Function name: main
int main(int argc, char **argv)
          DWORD
                        dwThreadID[MAX MAIN THREADS];
          HANDLE
                        hThread[MAX MAIN THREADS];
                     *fLoader;
          FILE
                    buffer[255];
          char
          int
                                                 i;
          for (i=0; i<MAX_MAIN_THREADS; i++)
                   hThread[i] = \overline{NULL};
  printf("\n****************
          printf("\n*
          printf("\n* Microsoft SQL Server
          printf("\n*
          printf("\n* TPC-C BENCHMARK KIT: Database loader
          printf("\n* Version %s
                                                  *", TPCKIT_VER);
          printf("\n*
printf("\n***********\n\n");
  // process command line arguments
  aptr = &args;
  GetArgsLoader(argc, argv, aptr);
          // verify database and tables exist before attempting to load
          CheckSQL();
          CheckDataBase();
          printf("Build interface is ODBC.\n");
          if (aptr->build index == 0)
                   printf("Data load only - no index creation.\n");
          else
                   printf("Data load and index creation.\n");
          if (aptr->index order == 0)
                   printf("Clustered indexes will be created after bulk
load.\n");
          else
                   printf("Clustered indexes will be created before bulk
load.\n");
          // set database scale values
          if (aptr->scale_down == 1)
                   printf("*** Scaled Down Database ***\n");
                    max items = MAXITEMS SCALE DOWN;
                   customers_per_district =
CUSTOMERS SCALE DOWN;
                    orders_per_district = ORDERS_SCALE_DOWN;
                    first_new_order = 0;
                    last_new_order = 30;
          else
                    max items = MAXITEMS;
```

```
customers_per_district =
CUSTOMERS PER DISTRICT;
                     orders per district = ORDERS PER DISTRICT;
                     first_new_order = 2100;
                     last_new_order = 3000;
          // open connections to SQL Server
          OpenConnections();
          // open file for loader results
  fLoader = fopen(aptr->loader_res_file, "w");
  if (fLoader == NULL)
                     printf("Error, loader result file open failed.");
                     exit(-1);
  // start loading data
  sprintf(buffer,"TPC-C load started for %ld
warehouses.\n",aptr->num_warehouses);
          printf("%s",buffer);
          fprintf(fLoader,"%s",buffer);
          main_time_start = (TimeNow() / MILLI);
          // start parallel load threads
          if (aptr->tables_all || aptr->table_item)
                     fprintf(fLoader, "\nStarting loader threads for: item\n");
                     hThread[0] = CreateThread(NULL,
0,
(LPTHREAD START ROUTINE) LoadItem,
NULL,
0.
&dwThreadID[0]);
                     if(hThread[0] == NULL)
                                printf("Error, failed in creating creating thread
= 0.\langle n'' \rangle;
                                exit(-1);
          if (aptr->tables all || aptr->table warehouse)
                     fprintf(fLoader, "Starting loader threads for:
warehouse\n");
                     hThread[1] = CreateThread(NULL,
0,
(LPTHREAD_START_ROUTINE) LoadWarehouse,
```

```
NULL,
                                                                                );
0,
&dwThreadID[1]);
                      if (hThread[1] == NULL)
                                printf("Error, failed in creating creating thread
= 1.\langle n'' \rangle;
                                exit(-1);
          }
           if (aptr->tables_all || aptr->table_customer)
                      fprintf(fLoader, "Starting loader threads for:
customer\n");
                     hThread[2] = CreateThread(NULL,
0,
(LPTHREAD_START_ROUTINE) LoadCustomer,
NULL,
0,
&dwThreadID[2]);
                     if (hThread[2] == NULL)
                                printf("Error, failed in creating creating main
thread = 2.\n");
                                exit(-1);
           if (aptr->tables all || aptr->table orders)
                      fprintf(fLoader, "Starting loader threads for: orders\n");
                     hThread[3] = CreateThread(NULL,
0,
(LPTHREAD_START_ROUTINE) LoadOrders,
NULL,
&dwThreadID[3]);
                      if (hThread[3] == NULL)
                                printf("Error, failed in creating creating main
thread = 3.\n");
                                exit(-1);
           // Wait for threads to finish...
           for (i=0; i<MAX MAIN THREADS; i++)
                     if (hThread[i] != NULL)
```

```
WaitForSingleObject( hThread[i], INFINITE
                               CloseHandle(hThread[i]);
                               hThread[i] = NULL;
          }
          main_time_end = (TimeNow() / MILLI);
  sprintf(buffer,"\nTPC-C load completed successfully in %ld minutes.\n",
                               (main_time_end - main_time_start)/60);
          printf("%s",buffer);
          fprintf(fLoader, "%s", buffer);
          fclose(fLoader);
          SQLFreeEnv(henv);
  exit(0);
          return 0;
// Function name: LoadItem
void LoadItem()
  long
                     i_id;
          long
                               i im id;
                     i_name[I_NAME_LEN+1];
  char
  double
                     i_price;
  char
                     i data[I DATA LEN+1];
                               name[20];
          char
          long
                               time start;
          RETCODE
          DBINT
                               rcint;
                               bcphint[128];
          char
          // Seed with unique number
          seed(1);
          printf("Loading item table...\n");
          // if build index before load
          if ((aptr->build index == 1) && (aptr->index order == 1))
                     BuildIndex("idxitmcl");
          InitString(i name, I NAME LEN+1);
          InitString(i_data, I_DATA_LEN+1);
          sprintf(name, "%s..%s", aptr->database, "item");
          rc = bcp_init(i_hdbc1, name, NULL, "logs\\item.err", DB_IN);
          if (rc != SUCCEED)
                     HandleErrorDBC(i_hdbc1);
          if ((aptr->build index == 1) && (aptr->index order == 1))
```

```
BuildIndex("idxitmcl");
                    sprintf(bcphint, "tablock, order (i id),
ROWS PER BATCH = 100000");
                    rc = bcp control(i hdbc1, BCPHINTS, (void*) bcphint);
                    if (rc != SUCCEED)
                              HandleErrorDBC(i_hdbc1);
          rc = bcp_bind(i_hdbc1, (BYTE *) &i_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT4, 1);
                                                                           // Function : LoadWarehouse
          if (rc != SUCCEED)
                    HandleErrorDBC(i_hdbc1);
                                                                           created
          rc = bcp bind(i hdbc1, (BYTE *) &i im id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT4, 2);
          if (rc != SUCCEED)
                    HandleErrorDBC(i hdbc1);
                                                                           void LoadWarehouse()
          rc = bcp_bind(i_hdbc1, (BYTE *) i_name, 0, I_NAME_LEN,
NULL, 0, 0, 3);
                                                                             short
                                                                                     w id;
          if (rc != SUCCEED)
                                                                             char
                    HandleErrorDBC(i_hdbc1);
                                                                             char
                                                                             char
          rc = bcp_bind(i_hdbc1, (BYTE *) &i_price, 0,
                                                                             char
SQL VARLEN DATA, NULL, 0, SQLFLT8, 4);
                                                                             char
          if (rc != SUCCEED)
                                                                             char
                                                                                     w_zip[ZIP_LEN+1];
                    HandleErrorDBC(i hdbc1);
                                                                             double w_tax;
                                                                             double
                                                                                    w ytd;
          rc = bcp_bind(i_hdbc1, (BYTE *) i_data, 0, I_DATA_LEN, NULL,
                                                                                     char
                                                                                               name[20];
0, 0, 5);
                                                                                     long
          if (rc != SUCCEED)
                                                                                     RETCODE
                    HandleErrorDBC(i hdbc1);
                                                                                     DBINT
                                                                                               reint;
                                                                                     char
          time_start = (TimeNow() / MILLI);
          item_rows_loaded = 0;
                                                                                     seed(2);
          for (i_id = 1; i_id \le max_items; i_id++)
                    i_im_id = RandomNumber(1L, 10000L);
                    MakeAlphaString(14, 24, I NAME LEN, i name);
                    i price = ((float) RandomNumber(100L, 10000L))/100.0;
                    MakeOriginalAlphaString(26, 50, I_DATA_LEN, i_data,
10);
                    rc = bcp_sendrow(i_hdbc1);
                    if (rc != SUCCEED)
                              HandleErrorDBC(i hdbc1);
                                                                                     if (rc != SUCCEED)
                    item rows loaded++;
                    CheckForCommit(i_hdbc1, i_hstmt1, item_rows_loaded,
"item", &time_start);
          }
          rcint = bcp_done(i_hdbc1);
          if (rcint < 0)
                    HandleErrorDBC(i_hdbc1);
                                                                           bcphint);
          printf("Finished loading item table.\n");
          SQLFreeStmt(i hstmt1, SQL DROP);
          SQLDisconnect(i_hdbc1);
          SQLFreeConnect(i_hdbc1);
                                                                                     if (rc != SUCCEED)
          // if build index after load
          if ((aptr->build_index == 1) && (aptr->index_order == 0))
```

```
// Loads WAREHOUSE table and loads Stock and District as Warehouses are
          w name[W NAME LEN+1];
          w_street_1[ADDRESS_LEN+1];
          w street 2[ADDRESS LEN+1];
          w city[ADDRESS LEN+1];
         w state[STATE LEN+1];
                    time start;
                    bcphint[128];
          // Seed with unique number
          printf("Loading warehouse table...\n");
          // if build index before load...
          if ((aptr->build index == 1) && (aptr->index order == 1))
                    BuildIndex("idxwarel");
          InitString(w_name, W_NAME_LEN+1);
          InitAddress(w street 1, w street 2, w city, w state, w zip);
          sprintf(name, "%s..%s", aptr->database, "warehouse");
         rc = bcp_init(w_hdbc1, name, NULL, "logs\\whouse.err", DB_IN);
                    HandleErrorDBC(w hdbc1);
          if ((aptr->build index == 1) && (aptr->index order == 1))
                    sprintf(bcphint, "tablock, order (w_id),
ROWS PER BATCH = %d", aptr->num warehouses);
                    rc = bcp_control(w_hdbc1, BCPHINTS, (void*)
                    if (rc != SUCCEED)
                              HandleErrorDBC(w hdbc1);
          rc = bcp_bind(w_hdbc1, (BYTE *) &w_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, 1);
                    HandleErrorDBC(w_hdbc1);
```

```
rc = bcp_bind(w_hdbc1, (BYTE *) w_name, 0, W_NAME_LEN,
NULL, 0, 0, 2);
                                                                                     printf("Finished loading warehouse table.\n");
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);
                                                                                     // if build index after load...
                                                                                     if ((aptr->build_index == 1) && (aptr->index_order == 0))
                                                                                               BuildIndex("idxwarel");
          rc = bcp bind(w hdbc1, (BYTE *) w street 1, 0, ADDRESS LEN,
NULL, 0, 0, 3);
          if (rc != SUCCEED)
                                                                                     stock rows loaded = 0;
                    HandleErrorDBC(w hdbc1);
                                                                                     district rows loaded = 0;
          rc = bcp_bind(w_hdbc1, (BYTE *) w_street_2, 0, ADDRESS_LEN,
                                                                                     District();
NULL, 0, 0, 4);
                                                                                     Stock();
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);
          rc = bcp_bind(w_hdbc1, (BYTE *) w_city, 0, ADDRESS_LEN,
NULL, 0, 0, 5);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);
                                                                           // Function : District
          rc = bcp_bind(w_hdbc1, (BYTE *) w_state, 0, STATE_LEN,
NULL, 0, 0, 6);
          if (rc != SUCCEED)
                    HandleErrorDBC(w hdbc1);
                                                                           void District()
          rc = bcp_bind(w_hdbc1, (BYTE *) w_zip, 0, ZIP_LEN, NULL, 0, 0,
                                                                             short
7);
                                                                                     d id;
          if (rc != SUCCEED)
                                                                             short
                                                                                     d_w_id;
                    HandleErrorDBC(w hdbc1);
                                                                             char
                                                                                     d_name[D_NAME_LEN+1];
                                                                                     d_street_1[ADDRESS_LEN+1];
                                                                             char
          rc = bcp bind(w hdbc1, (BYTE *) &w tax, 0,
                                                                             char
                                                                                     d street 2[ADDRESS LEN+1];
SQL_VARLEN_DATA, NULL, 0, SQLFLT8, 8);
                                                                                     d_city[ADDRESS_LEN+1];
                                                                             char
          if (rc != SUCCEED)
                                                                             char
                                                                                     d state[STATE LEN+1];
                    HandleErrorDBC(w hdbc1);
                                                                                     d zip[ZIP LEN+1];
                                                                             char
                                                                             double d_tax;
          rc = bcp bind(w hdbc1, (BYTE *) &w ytd, 0,
                                                                             double d ytd;
SQL_VARLEN_DATA, NULL, 0, SQLFLT8, 9);
                                                                                     char
                                                                                               name[20];
          if (rc != SUCCEED)
                                                                                     d_next_o_id;
                                                                             long
                    HandleErrorDBC(w_hdbc1);
                                                                                     long
                                                                                               time_start;
                                                                                     int
                                                                                                         w_id;
          time start = (TimeNow() / MILLI);
                                                                                     RETCODE
                                                                                                         rc;
                                                                                     DBINT
                                                                                               reint:
          warehouse rows loaded = 0;
                                                                                               bcphint[128];
                                                                                     char
          for (w id = (short)aptr->starting warehouse; w id <=
                                                                                     // Seed with unique number
aptr->num_warehouses; w_id++)
                                                                                     seed(4);
                    MakeAlphaString(6,10, W NAME LEN, w name);
                                                                                     printf("Loading district table...\n");
                    MakeAddress(w_street_1, w_street_2, w_city, w_state,
                                                                                     // build index before load
                                                                                     if ((aptr->build_index == 1) && (aptr->index_order == 1))
w_zip);
                                                                                               BuildIndex("idxdiscl");
                    w_tax = ((float) RandomNumber(0L,2000L))/10000.00;
                                                                                     InitString(d name, D NAME LEN+1);
                    w ytd = 300000.00;
                                                                                     InitAddress(d_street_1, d_street_2, d_city, d_state, d_zip);
                                                                                     sprintf(name, "%s..%s", aptr->database, "district");
                    rc = bcp sendrow(w hdbc1);
                    if (rc != SUCCEED)
                                                                                     rc = bcp_init(w_hdbc1, name, NULL, "logs\\district.err", DB_IN);
                              HandleErrorDBC(w_hdbc1);
                                                                                     if (rc != SUCCEED)
                    warehouse rows loaded++;
                                                                                               HandleErrorDBC(w hdbc1);
                    CheckForCommit(w hdbc1, i hstmt1,
warehouse_rows_loaded, "warehouse", &time_start);
                                                                                     if ((aptr->build_index == 1) && (aptr->index_order == 1))
                                                                                               sprintf(bcphint, "tablock, order (d_w_id, d_id),
          rcint = bcp done(w hdbc1);
                                                                           ROWS PER BATCH = \%u'', (aptr->num warehouses *10));
                                                                                               rc = bcp_control(w_hdbc1, BCPHINTS, (void*)
          if (rcint < 0)
                    HandleErrorDBC(w hdbc1);
                                                                           bcphint);
```

```
if (rc != SUCCEED)
                                                                                              d_w_id = w_id;
                              HandleErrorDBC(w hdbc1);
                                                                                               for (d id = 1; d id <= DISTRICT PER WAREHOUSE;
          }
                                                                          d_id++)
          rc = bcp bind(w hdbc1, (BYTE *) &d id, 0,
SQL VARLEN DATA, NULL, 0, SQLINT2, 1);
                                                                                                         MakeAlphaString(6,10,D NAME LEN,
          if (rc != SUCCEED)
                                                                          d name);
                    HandleErrorDBC(w hdbc1);
                                                                                                         MakeAddress(d_street_1, d_street_2, d_city,
          rc = bcp bind(w hdbc1, (BYTE *) &d w id, 0,
                                                                          d state, d zip);
SQL_VARLEN_DATA, NULL, 0, SQLINT2, 2);
          if (rc != SUCCEED)
                                                                                                         d tax = ((float))
                    HandleErrorDBC(w hdbc1);
                                                                           RandomNumber(0L,2000L))/10000.00;
          rc = bcp_bind(w_hdbc1, (BYTE *) d_name, 0, D_NAME_LEN,
                                                                                                         rc = bcp_sendrow(w_hdbc1);
NULL, 0, 0, 3);
                                                                                                         if (rc != SUCCEED)
          if (rc != SUCCEED)
                                                                                                                   HandleErrorDBC(w hdbc1);
                    HandleErrorDBC(w_hdbc1);
                                                                                                         district rows loaded++;
          rc = bcp bind(w hdbc1, (BYTE *) d street 1, 0, ADDRESS LEN,
                                                                                                         CheckForCommit(w hdbc1, w hstmt1,
NULL, 0, 0, 4);
                                                                          district_rows_loaded, "district", &time_start);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);
          rc = bcp_bind(w_hdbc1, (BYTE *) d_street_2, 0, ADDRESS_LEN,
                                                                                    rcint = bcp_done(w_hdbc1);
NULL, 0, 0, 5);
                                                                                    if (reint < 0)
          if (rc != SUCCEED)
                                                                                              HandleErrorDBC(w hdbc1);
                    HandleErrorDBC(w_hdbc1);
                                                                                    printf("Finished loading district table.\n");
          rc = bcp_bind(w_hdbc1, (BYTE *) d_city, 0, ADDRESS_LEN,
NULL, 0, 0, 6);
                                                                                    // if build index after load...
                                                                                    if ((aptr->build_index == 1) && (aptr->index_order == 0))
          if (rc != SUCCEED)
                                                                                              BuildIndex("idxdiscl");
                    HandleErrorDBC(w_hdbc1);
          rc = bcp_bind(w_hdbc1, (BYTE *) d_state, 0, STATE_LEN, NULL,
                                                                            return:
0, 0, 7);
          if (rc != SUCCEED)
                    HandleErrorDBC(w hdbc1);
          rc = bcp_bind(w_hdbc1, (BYTE *) d_zip, 0, ZIP_LEN, NULL, 0, 0,
8);
          if (rc != SUCCEED)
                                                                          // Function : Stock
                    HandleErrorDBC(w hdbc1);
          rc = bcp bind(w hdbc1, (BYTE *) &d tax, 0,
SQL_VARLEN_DATA, NULL, 0, SQLFLT8, 9);
          if (rc != SUCCEED)
                                                                           void Stock()
                    HandleErrorDBC(w hdbc1);
                                                                                    s_i_id;
                                                                             long
          rc = bcp bind(w hdbc1, (BYTE *) &d ytd, 0,
                                                                                    s w id;
                                                                             short
SQL_VARLEN_DATA, NULL, 0, SQLFLT8, 10);
                                                                             short
                                                                                    s_quantity;
          if (rc != SUCCEED)
                                                                                    s dist 01[S DIST LEN+1];
                                                                            char
                    HandleErrorDBC(w_hdbc1);
                                                                                    s_dist_02[S_DIST_LEN+1];
                                                                             char
                                                                                    s_dist_03[S_DIST_LEN+1];
s_dist_04[S_DIST_LEN+1];
                                                                             char
          rc = bcp_bind(w_hdbc1, (BYTE *) &d_next_o_id, 0,
                                                                             char
                                                                                    s_dist_05[S_DIST_LEN+1];
SQL_VARLEN_DATA, NULL, 0, SQLINT4, 11);
                                                                             char
          if (rc != SUCCEED)
                                                                                    s dist 06[S DIST LEN+1];
                                                                             char
                                                                                    s_dist_07[S_DIST_LEN+1];
                    HandleErrorDBC(w_hdbc1);
                                                                             char
                                                                                    s dist 08[S_DIST_LEN+1];
                                                                             char
                                                                                    s_dist_09[S_DIST_LEN+1];
          d_ytd = 30000.0;
                                                                             char
                                                                             char
                                                                                    s_dist_10[S_DIST_LEN+1];
          d_next_o_id = orders_per_district+1;
                                                                             long
                                                                                    s_ytd;
                                                                             short
                                                                                    s_order_cnt;
          time_start = (TimeNow() / MILLI);
                                                                             short
                                                                                    s_remote_cnt;
                                                                                    s_data[S_DATA_LEN+1];
                                                                            char
          for (w id = aptr->starting warehouse; w id <=
                                                                             short
                                                                                    len;
aptr->num_warehouses; w_id++)
                                                                                              name[20];
                                                                                    char
                                                                                    long
                                                                                              time_start;
          {
```

```
RETCODE
                                                                                   rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_06, 0, S_DIST_LEN,
                              rc:
                                                                          NULL, 0, 0, 9);
          DBINT
                   rcint;
                   bcphint[128];
                                                                                   if (rc != SUCCEED)
          char
                                                                                              HandleErrorDBC(w_hdbc1);
          // Seed with unique number
          seed(3);
                                                                                   rc = bcp bind(w hdbc1, (BYTE *) s dist 07, 0, S DIST LEN,
                                                                          NULL, 0, 0, 10);
          // if build index before load...
                                                                                    if (rc != SUCCEED)
          if ((aptr->build index == 1) && (aptr->index order == 1))
                                                                                              HandleErrorDBC(w hdbc1);
                    BuildIndex("idxstkcl");
                                                                                   rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_08, 0, S_DIST_LEN,
          sprintf(name, "%s..%s", aptr->database, "stock");
                                                                          NULL, 0, 0, 11);
                                                                                    if (rc != SUCCEED)
                                                                                              HandleErrorDBC(w_hdbc1);
          rc = bcp_init(w_hdbc1, name, NULL, "logs\\stock.err", DB_IN);
          if (rc != SUCCEED)
                                                                                    rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_09, 0, S_DIST_LEN,
                    HandleErrorDBC(w hdbc1);
                                                                          NULL, 0, 0, 12);
                                                                                    if (rc != SUCCEED)
          if ((aptr->build_index == 1) && (aptr->index_order == 1))
                                                                                              HandleErrorDBC(w_hdbc1);
                    sprintf(bcphint, "tablock, order (s i id, s w id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 100000));
                                                                                    rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_10, 0, S_DIST_LEN,
                   rc = bcp control(w hdbc1, BCPHINTS, (void*)
                                                                          NULL, 0, 0, 13);
bcphint);
                                                                                    if (rc != SUCCEED)
                   if (rc != SUCCEED)
                                                                                              HandleErrorDBC(w_hdbc1);
                              HandleErrorDBC(w_hdbc1);
                                                                                    rc = bcp_bind(w_hdbc1, (BYTE *) &s_ytd, 0,
          }
                                                                          SQL VARLEN DATA, NULL, 0, SQLINT4, 14);
          rc = bcp_bind(w_hdbc1, (BYTE *) &s_i_id, 0,
                                                                                    if (rc != SUCCEED)
SQL VARLEN DATA, NULL, 0, SQLINT4, 1);
                                                                                              HandleErrorDBC(w hdbc1);
          if (rc != SUCCEED)
                    HandleErrorDBC(w hdbc1);
                                                                                    rc = bcp bind(w hdbc1, (BYTE *) &s order cnt, 0,
                                                                          SQL_VARLEN_DATA, NULL, 0, SQLINT2, 15);
          bcp_bind(w_hdbc1, (BYTE *) &s_w_id, 0, SQL_VARLEN_DATA,
                                                                                   if (rc != SUCCEED)
                                                                                              HandleErrorDBC(w hdbc1);
NULL, 0, SQLINT2, 2);
          if (rc != SUCCEED)
                    HandleErrorDBC(w hdbc1);
                                                                                    rc = bcp bind(w hdbc1, (BYTE *) &s remote cnt, 0,
                                                                          SQL_VARLEN_DATA, NULL, 0, SQLINT2, 16);
          rc = bcp bind(w hdbc1, (BYTE *) &s quantity, 0,
                                                                                    if (rc != SUCCEED)
SQL_VARLEN_DATA, NULL, 0, SQLINT2, 3);
                                                                                              HandleErrorDBC(w_hdbc1);
          if (rc != SUCCEED)
                    HandleErrorDBC(w hdbc1);
                                                                                   rc = bcp bind(w hdbc1, (BYTE *) s data, 0, S DATA LEN,
                                                                          NULL, 0, 0, 17);
          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_01, 0, S_DIST_LEN,
                                                                                    if (rc != SUCCEED)
NULL, 0, 0, 4);
                                                                                              HandleErrorDBC(w_hdbc1);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);
                                                                                    s_ytd = s_order_cnt = s_remote_cnt = 0;
          rc = bcp bind(w hdbc1, (BYTE *) s dist 02, 0, S DIST LEN,
                                                                                    time start = (TimeNow() / MILLI);
NULL, 0, 0, 5);
          if (rc != SUCCEED)
                                                                                    printf("...Loading stock table\n");
                    HandleErrorDBC(w_hdbc1);
                                                                                    for (s i id=1; s i id \le max items; s i id++)
          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_03, 0, S_DIST_LEN,
NULL, 0, 0, 6);
          if (rc != SUCCEED)
                                                                                              for (s_w_id = (short)aptr->starting_warehouse; s_w_id
                   HandleErrorDBC(w_hdbc1);
                                                                          <= aptr->num_warehouses; s_w_id++)
          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_04, 0, S_DIST_LEN,
                                                                                                        s_quantity =
NULL, 0, 0, 7);
          if (rc != SUCCEED)
                                                                          (short)RandomNumber(10L,100L);
                   HandleErrorDBC(w hdbc1);
                                                                                                        len = MakeAlphaString(24,24,S DIST LEN,
                                                                          s_dist_01);
          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_05, 0, S_DIST_LEN,
                                                                                                        len = MakeAlphaString(24,24,S_DIST_LEN,
NULL, 0, 0, 8);
                                                                          s_dist_02);
          if (rc != SUCCEED)
                                                                                                        len = MakeAlphaString(24,24,S_DIST_LEN,
                    HandleErrorDBC(w hdbc1);
                                                                          s dist 03);
                                                                                                        len = MakeAlphaString(24,24,S_DIST_LEN,
                                                                          s dist 04);
```

```
len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_05);
                             len = MakeAlphaString(24,24,S DIST LEN,
s_dist_06);
                             len = MakeAlphaString(24,24,S_DIST_LEN,
s dist 07);
                             len = MakeAlphaString(24,24,S DIST LEN,
s_dist_08);
                             len = MakeAlphaString(24,24,S DIST LEN,
s_dist_09);
                             len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_10);
                             len = MakeOriginalAlphaString(26,50,
S_DATA_LEN, s_data, 10);
                             rc = bcp sendrow(w hdbc1);
                             if (rc != SUCCEED)
                                       HandleErrorDBC(w hdbc1);
                             stock_rows_loaded++;
                             CheckForCommit(w hdbc1, w hstmt1,
stock_rows_loaded, "stock", &time_start);
          rcint = bcp_done(w_hdbc1);
          if (rcint < 0)
                   HandleErrorDBC(w_hdbc1);
         printf("Finished loading stock table.\n");
          SQLFreeStmt(w hstmt1, SQL DROP);
         SQLDisconnect(w_hdbc1);
          SQLFreeConnect(w hdbc1);
          // if build index after load...
          if ((aptr->build_index == 1) && (aptr->index_order == 0))
                   BuildIndex("idxstkcl");
          return;
}
//
// Function : LoadCustomer
void LoadCustomer()
         LOADER TIME STRUCT
                                      customer_time_start;
          LOADER TIME STRUCT
                                      history time start;
         short
                                        w_id;
  short
                    d_id;
          DWORD
dwThreadID[MAX CUSTOMER THREADS];
         HANDLE
hThread[MAX_CUSTOMER_THREADS];
                                        name[20];
          RETCODE
rc;
          DBINT
                                                           rcint;
```

```
char
bcphint[128];
                                                              cmd[256];
          char
          // SQLRETURN
                                                              rc_1;
          // SQLSMALLINT
                                                              recnum,
MsgLen;
          // SQLCHAR
SqlState[6], Msg[SQL_MAX_MESSAGE_LENGTH];
          // SQLINTEGER
                                                              NativeError;
          // Seed with unique number
          seed(5);
          printf("Loading customer and history tables...\n");
          // if build index before load...
          if ((aptr->build_index == 1) && (aptr->index order == 1))
                    BuildIndex("idxcuscl");
          // Initialize bulk copy
          sprintf(name, "%s..%s", aptr->database, "customer");
          rc = bcp init(c hdbc1, name, NULL, "logs\\customer.err", DB IN);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);
          if ((aptr->build_index == 1) && (aptr->index_order == 1))
                    sprintf(bcphint, "tablock, order (c_w_id, c_d_id, c_id),
ROWS PER BATCH = %u", (aptr->num warehouses * 30000));
                    rc = bcp_control(c_hdbc1, BCPHINTS, (void*) bcphint);
                    if (rc != SUCCEED)
                               HandleErrorDBC(c_hdbc1);
          }
          sprintf(name, "%s..%s", aptr->database, "history");
          rc = bcp_init(c_hdbc2, name, NULL, "logs\\history.err", DB_IN);
          if (rc != SUCCEED)
                    HandleErrorDBC(c hdbc2);
          sprintf(bcphint, "tablock");
          rc = bcp_control(c_hdbc2, BCPHINTS, (void*) bcphint);
          if (rc != SUCCEED)
                    HandleErrorDBC(c hdbc2);
          customer rows loaded = 0;
          history_rows_loaded = 0;
          CustomerBufInit();
          customer_time_start.time_start = (TimeNow() / MILLI);
          history_time_start.time_start = (TimeNow() / MILLI);
          for (w_id = (short)aptr->starting_warehouse; w_id <=
aptr->num warehouses; w id++)
                    for (d id = 1; d id <= DISTRICT PER WAREHOUSE;
d id++)
                               CustomerBufLoad(d_id, w_id);
                               // Start parallel loading threads here...
```

```
// Start customer table thread
                                                              printf("...Loading customer table for: d id =
                                                                                                                                                                           // flush the bulk connection
d, w_id = d'n', d_id, w_id;
                                                                                                                                                                            rcint = bcp_done(c_hdbc1);
                                                                                                                                                                           if (rcint < 0)
                                                              hThread[0] = CreateThread(NULL,
                                                                                                                                                                                                HandleErrorDBC(c hdbc1);
                       0,
                                                                                                                                                                            rcint = bcp_done(c_hdbc2);
                                                                                                                                                                            if (rcint < 0)
                       (LPTHREAD START ROUTINE) LoadCustomerTable,
                                                                                                                                                                                                HandleErrorDBC(c hdbc2);
                                                                                                                                                                            printf("Finished loading customer table.\n");
                       &customer_time_start,
                       0,
                                                                                                                                                                           // if build index after load...
                                                                                                                                                                            if ((aptr->build index == 1) && (aptr->index order == 0))
                       &dwThreadID[0]);
                                                                                                                                                                                                BuildIndex("idxcuscl");
                                                              if(hThread[0] == NULL)
                                                                                                                                                                            // build non-clustered index
                                                                                                                                                                            if (aptr->build index == 1)
                                                                                                                                                                                                BuildIndex("idxcusnc");
                                                                                   printf("Error, failed in creating
creating thread = 0.\n");
                                                                                   exit(-1);
                                                                                                                                                                           // Output the NURAND used for the loader into C FIRST for C ID
                                                                                                                                                       = 1,
                                                                                                                                                                           // C W ID = 1, and C D ID = 1
                                                              // Start History table thread
                                                                                                                                                                            sprintf(cmd, "isql -S%s -U%s -P%s -d%s -e -Q\"update customer set
                                                                                                                                                       c_{inst} = C_{inst} 
                                                              printf("...Loading history table for: d id = %d,
                                                                                                                                                       logs\\nurand load.log",
w_id = %d\n", d_id, w_id);
                                                                                                                                                                                                                                         aptr->server,
                                                                                                                                                                                                                                         aptr->user,
                                                              hThread[1] = CreateThread(NULL,
                                                                                                                                                                                                                                         aptr->password,
                                                                                                                                                                                                                                         aptr->database.
                       0,
                                                                                                                                                                                                                                         LOADER_NURAND_C);
                       (LPTHREAD START ROUTINE) LoadHistoryTable,
                                                                                                                                                                            system(cmd);
                                                                                                                                                                            SQLFreeStmt(c hstmt1, SQL DROP);
                       &history_time_start,
                                                                                                                                                                            SQLDisconnect(c_hdbc1);
                                                                                                                                                                            SQLFreeConnect(c hdbc1);
                       0,
                       &dwThreadID[1]);
                                                                                                                                                                            SQLFreeStmt(c_hstmt2, SQL_DROP);
                                                                                                                                                                            SQLDisconnect(c hdbc2);
                                                                                                                                                                            SQLFreeConnect(c_hdbc2);
                                                              if (hThread[1] == NULL)
                                                                                  printf("Error, failed in creating
creating thread = 1.\n");
                                                                                                                                                           return;
                                                                                   exit(-1);
                                                              WaitForSingleObject( hThread[0], INFINITE
);
                                                              WaitForSingleObject( hThread[1], INFINITE
);
                                                                                                                                                       // Function : CustomerBufInit
                                                              if(CloseHandle(hThread[0]) == FALSE)
                                                                                  printf("Error, failed in closing
customer thread handle with errno: %d\n", GetLastError());
                                                                                                                                                       void CustomerBufInit()
                                                              if(CloseHandle(hThread[1]) == FALSE)
                                                                                                                                                                            int i;
                                                                                                                                                                            for (i=0;i<customers_per_district;i++)
                                                                                  printf("Error, failed in closing
history thread handle with errno: %d\n", GetLastError());
                                                                                                                                                                                                customer_buf[i].c_id = 0;
                                                                                                                                                                                                customer_buf[i].c_d_id = 0;
                                                                                                                                                                                                customer buf[i].c w id = 0;
                                         }
                                                                                                                                                                                                strcpy(customer buf[i].c first,"");
```

```
strcpy(customer buf[i].c middle,"");
                                                                                         {
                     strcpy(customer_buf[i].c_last,"");
                     strcpy(customer_buf[i].c_street_1,"");
                                                                                                   customer buf[i].c d id = d id;
                     strcpy(customer_buf[i].c_street_2,"
                                                                                                   customer_buf[i].c_w_id = w_id;
                     strcpy(customer_buf[i].c_city,"");
                                                                                                   customer_buf[i].h_amount = 10.0;
                     strcpy(customer_buf[i].c_state,"");
                     strcpy(customer_buf[i].c_zip,"");
                                                                                                   customer buf[i].c ytd payment = 10.0;
                     strcpy(customer_buf[i].c_phone,"");
                     strcpy(customer_buf[i].c_credit,"");
                                                                                                   customer_buf[i].c_payment_cnt = 1;
                                                                                                   customer buf[i].c delivery cnt = 0;
                     customer_buf[i].c_credit_lim = 0;
                     customer_buf[i].c_discount = (float) 0;
                                                                                                   // Generate CUSTOMER and HISTORY data
                     // fix to avoid ODBC float to numeric conversion
                                                                                                   customer_buf[i].c_id = c[i].c_id;
problem.
                     //
                               customer_buf[i].c_balance = 0;
                                                                                                   strcpy(customer_buf[i].c_first, c[i].c_first);
                     strcpy(customer_buf[i].c_balance,"");
                                                                                                   strcpy(customer_buf[i].c_last, c[i].c_last);
                     customer_buf[i].c_ytd_payment = 0;
                                                                                                   customer_buf[i].c_middle[0] = 'O';
                     customer buf[i].c payment cnt = 0;
                                                                                                   customer buf[i].c middle[1] = 'E';
                     customer_buf[i].c_delivery_cnt = 0;
                                                                                                   MakeAddress(customer buf[i].c street 1,
                     strcpy(customer_buf[i].c_data,"");
                                                                                                                           customer_buf[i].c_street_2,
                                                                                                                           customer buf[i].c city,
                     customer_buf[i].h_amount = 0;
                                                                                                                           customer_buf[i].c_state,
                                                                                                                           customer_buf[i].c_zip);
                     strcpy(customer buf[i].h data,"");
                                                                                                   MakeNumberString(16, 16, PHONE_LEN,
          }
                                                                              customer_buf[i].c_phone);
                                                                                                   if (RandomNumber(1L, 100L) > 10)
                                                                                                              customer_buf[i].c_credit[0] = 'G';
                                                                                                   else
                                                                                                              customer buf[i].c credit[0] = 'B';
                                                                                                   customer\_buf[i].c\_credit[1] = 'C';
                                                                                                   customer_buf[i].c_credit_lim = 50000.0;
                                                                                                   customer buf[i].c discount = ((float)
// Function : CustomerBufLoad
                                                                              RandomNumber(0L, 5000L)) / 10000.0;
// Fills shared buffer for HISTORY and CUSTOMER
                                                                                                   // fix to avoid ODBC float to numeric conversion
                                                                              problem.
                                                                                                   // customer buf[i].c balance = -10.0;
void CustomerBufLoad(int d_id, int w_id)
                                                                                                   strcpy(customer_buf[i].c_balance,"-10.0");
                                                                                                   MakeAlphaString(300, 500, C_DATA_LEN,
  CUSTOMER SORT STRUCT c[CUSTOMERS PER DISTRICT];
                                                                              customer buf[i].c data);
                                                                                                   // Generate HISTORY data
          for (i=0;i<customers_per_district;i++)
                                                                                                   MakeAlphaString(12, 24, H DATA LEN,
                                                                              customer_buf[i].h_data);
                     if (i < 1000)
                               LastName(i, c[i].c_last);
                     else
LastName(NURand(255,0,999,LOADER_NURAND_C), c[i].c_last);
                     MakeAlphaString(8,16,FIRST_NAME_LEN,
c[i].c first);
                                                                              // Function : LoadCustomerTable
                     c[i].c id = i+1;
          }
                                                                              void LoadCustomerTable(LOADER_TIME_STRUCT *customer_time_start)
          printf("...Loading customer buffer for: d_id = %d, w_id = %d\n",
                               d id, w id);
                                                                                         int
                                                                                long
                                                                                         c_id;
          for (i=0;i<customers per district;i++)
                                                                                short
                                                                                         c_d_id;
```

```
short
          c w id;
                                                                                           HandleErrorDBC(c_hdbc1);
  char
          c_first[FIRST_NAME_LEN+1];
          c middle[MIDDLE NAME LEN+1];
                                                                          rc = bcp_bind(c_hdbc1, (BYTE *) c_state, 0, STATE_LEN, NULL, 0, 0, 10);
  char
          c_last[LAST_NAME_LEN+1];
                                                                                  if (rc != SUCCEED)
  char
          c street 1[ADDRESS LEN+1];
                                                                                           HandleErrorDBC(c hdbc1);
  char
          c street 2[ADDRESS LEN+1];
  char
          c city[ADDRESS LEN+1];
  char
                                                                          rc = bcp bind(c hdbc1, (BYTE *) c zip, 0, ZIP LEN, NULL, 0, 0, 11);
          c_state[STATE_LEN+1];
                                                                                  if (rc != SUCCEED)
  char
          c_zip[ZIP_LEN+1];
  char
                                                                                           HandleErrorDBC(c hdbc1);
          c_phone[PHONE LEN+1];
  char
  char
          c_credit[CREDIT_LEN+1];
                                                                          rc = bcp_bind(c_hdbc1, (BYTE *) c_phone, 0, PHONE_LEN, NULL, 0, 0,
          c_credit_lim;
  double
                                                                        12):
  double
           c discount;
                                                                                  if (rc != SUCCEED)
                                                                                           HandleErrorDBC(c_hdbc1);
         // fix to avoid ODBC float to numeric conversion problem.
         // double
                             c balance;
                                                                                  rc = bcp_bind(c_hdbc1, (BYTE *) &c_since, 0, C_SINCE_LEN,
                                                                        NULL, 0, SQLCHARACTER, 13);
         char
                             c balance[6];
                                                                                  if (rc != SUCCEED)
                                                                                           HandleErrorDBC(c_hdbc1);
  double
          c_ytd_payment;
          c payment cnt;
  short
          c_delivery_cnt;
  short
                                                                          rc = bcp_bind(c_hdbc1, (BYTE *) c_credit, 0, CREDIT_LEN, NULL, 0, 0,
          c data[C DATA LEN+1];
  char
                                                                        14);
          char
                             c_since[C_SINCE_LEN+1];
                                                                                  if (rc != SUCCEED)
         RETCODE
                                                                                           HandleErrorDBC(c hdbc1);
  rc = bcp_bind(c_hdbc1, (BYTE *) &c_id, 0, SQL_VARLEN_DATA, NULL,
                                                                          rc = bcp_bind(c_hdbc1, (BYTE *) &c_credit_lim, 0,
0, SQLINT4, 1);
                                                                        SQL VARLEN DATA, NULL, 0, SQLFLT8, 15);
          if (rc != SUCCEED)
                                                                                  if (rc != SUCCEED)
                   HandleErrorDBC(c hdbc1);
                                                                                           HandleErrorDBC(c hdbc1);
  rc = bcp bind(c hdbc1, (BYTE *) &c d id, 0, SQL VARLEN DATA,
                                                                          rc = bcp bind(c hdbc1, (BYTE *) &c discount, 0, SQL VARLEN DATA,
                                                                        NULL, 0, SQLFLT8, 16);
NULL, 0, SQLINT2, 2);
         if (rc != SUCCEED)
                                                                                  if (rc != SUCCEED)
                   HandleErrorDBC(c hdbc1);
                                                                                           HandleErrorDBC(c hdbc1);
         rc = bcp bind(c hdbc1, (BYTE *) &c w id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, 3);
                                                                                  // fix to avoid ODBC float to numeric conversion problem.
         if (rc != SUCCEED)
                   HandleErrorDBC(c_hdbc1);
                                                                          // rc = bcp_bind(c_hdbc1, (BYTE *) &c_balance, 0,
                                                                        SQL VARLEN DATA, NULL, 0, SQLFLT8, 17);
  rc = bcp bind(c hdbc1, (BYTE *) c first, 0, FIRST NAME LEN, NULL, 0,
                                                                                  // if (rc != SUCCEED)
                                                                                           HandleErrorDBC(c_hdbc1);
0, 4);
          if (rc != SUCCEED)
                                                                          rc = bcp bind(c hdbc1, (BYTE *) c balance, 0, 5, NULL, 0,
                                                                        SQLCHARACTER, 17);
                   HandleErrorDBC(c_hdbc1);
                                                                                  if (rc != SUCCEED)
                                                                                           HandleErrorDBC(c_hdbc1);
  rc = bcp_bind(c_hdbc1, (BYTE *) c_middle, 0,
MIDDLE NAME LEN, NULL, 0, 0, 5);
          if (rc != SUCCEED)
                                                                          rc = bcp_bind(c_hdbc1, (BYTE *) &c_ytd_payment, 0,
                   HandleErrorDBC(c_hdbc1);
                                                                        SQL VARLEN DATA, NULL, 0, SQLFLT8, 18);
  rc = bcp_bind(c_hdbc1, (BYTE *) c_last, 0, LAST_NAME_LEN, NULL, 0,
                                                                                  if (rc != SUCCEED)
                                                                                           HandleErrorDBC(c hdbc1);
0, 6);
         if (rc != SUCCEED)
                   HandleErrorDBC(c hdbc1);
                                                                          rc = bcp bind(c hdbc1, (BYTE *) &c payment cnt, 0,
                                                                        SQL VARLEN_DATA, NULL, 0, SQLINT2, 19);
  rc = bcp_bind(c_hdbc1, (BYTE *) c_street_1, 0, ADDRESS_LEN, NULL, 0,
                                                                                  if (rc != SUCCEED)
                                                                                           HandleErrorDBC(c hdbc1);
0, 7);
         if (rc != SUCCEED)
                   HandleErrorDBC(c hdbc1);
                                                                          rc = bcp bind(c hdbc1, (BYTE *) &c delivery cnt,0,
                                                                        SQL_VARLEN_DATA, NULL, 0, SQLINT2, 20);
  rc = bcp_bind(c_hdbc1, (BYTE *) c_street_2, 0, ADDRESS_LEN,
                                                                                  if (rc != SUCCEED)
NULL,0,0, 8);
                                                                                           HandleErrorDBC(c hdbc1);
         if (rc != SUCCEED)
                   HandleErrorDBC(c_hdbc1);
                                                                          rc = bcp_bind(c_hdbc1, (BYTE *) c_data, 0, 500, NULL, 0, 0, 21);
                                                                                  if (rc != SUCCEED)
  rc = bcp bind(c hdbc1, (BYTE *) c city, 0, ADDRESS LEN, NULL, 0, 0,
                                                                                           HandleErrorDBC(c hdbc1);
9);
         if (rc != SUCCEED)
                                                                          for (i = 0; i < customers_per_district; i++)
```

```
HandleErrorDBC(c hdbc2);
  {
                    c id = customer buf[i].c id;
                    c d id = customer buf[i].c d id;
                                                                             rc = bcp bind(c hdbc2, (BYTE *) &c d id, 0, SQL VARLEN DATA,
                                                                           NULL, 0, SQLINT2, 2);
                    c_w_id = customer_buf[i].c_w_id;
                                                                                     if (rc != SUCCEED)
                    strcpy(c first, customer buf[i].c first);
                                                                                               HandleErrorDBC(c hdbc2);
                    strcpy(c middle, customer buf[i].c middle);
                                                                             rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA,
                    strcpy(c last, customer buf[i].c last);
                                                                           NULL, 0, SQLINT2, 3);
                    strcpy(c_street_1, customer_buf[i].c_street_1);
                                                                                     if (rc != SUCCEED)
                    strcpy(c_street_2, customer_buf[i].c_street_2);
                                                                                               HandleErrorDBC(c_hdbc2);
                    strcpy(c city, customer buf[i].c city);
                    strcpy(c_state, customer_buf[i].c state);
                                                                             rc = bcp bind(c hdbc2, (BYTE *) &c d id, 0, SQL VARLEN DATA,
                    strcpy(c_zip, customer_buf[i].c_zip);
                                                                           NULL, 0, SQLINT2, 4);
                    strcpy(c_phone, customer_buf[i].c_phone);
                                                                                     if (rc != SUCCEED)
                    strcpy(c credit, customer buf[i].c credit);
                                                                                               HandleErrorDBC(c hdbc2);
                    FormatDate(&c_since);
                                                                             rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA,
                                                                           NULL, 0, SQLINT2, 5);
                                                                                     if (rc != SUCCEED)
                    c_credit_lim = customer_buf[i].c_credit_lim;
                                                                                               HandleErrorDBC(c_hdbc2);
                    c_discount = customer_buf[i].c_discount;
                                                                                     rc = bcp_bind(c_hdbc2, (BYTE *) &h_date, 0, H_DATE_LEN,
                    // fix to avoid ODBC float to numeric conversion
                                                                           NULL, 0, SQLCHARACTER, 6);
problem.
                                                                                     if (rc != SUCCEED)
                    // c balance = customer buf[i].c balance;
                                                                                               HandleErrorDBC(c_hdbc2);
                    strcpy(c_balance, customer_buf[i].c_balance);
                                                                             rc = bcp_bind(c_hdbc2, (BYTE *) &h_amount, 0, SQL_VARLEN_DATA,
                    c_ytd_payment = customer_buf[i].c_ytd_payment;
                                                                           NULL, 0, SQLFLT8, 7);
                    c payment cnt = customer buf[i].c payment cnt;
                                                                                     if (rc != SUCCEED)
                    c delivery_cnt = customer_buf[i].c_delivery_cnt;
                                                                                               HandleErrorDBC(c hdbc2);
                    strcpy(c_data, customer_buf[i].c_data);
                                                                             rc = bcp_bind(c_hdbc2, (BYTE *) h_data, 0, H_DATA_LEN, NULL, 0, 0,
                    // Send data to server
                                                                                     if (rc != SUCCEED)
                    rc = bcp_sendrow(c_hdbc1);
                                                                                               HandleErrorDBC(c hdbc2);
                    if (rc != SUCCEED)
                              HandleErrorDBC(c_hdbc1);
                                                                             for (i = 0; i < customers_per_district; i++)
                    customer_rows_loaded++;
                                                                                               c_id = customer_buf[i].c_id;
                    CheckForCommit(c hdbc1, c hstmt1,
                                                                                               c d id = customer buf[i].c d id;
customer_rows_loaded, "customer", &customer_time_start->time_start);
                                                                                               c_w_id = customer_buf[i].c_w_id;
                                                                                               h amount = customer buf[i].h amount;
                                                                                               strcpy(h_data, customer_buf[i].h_data);
                                                                                               FormatDate(&h_date);
                                                                                               // send to server
                                                                                               rc = bcp_sendrow(c_hdbc2);
                                                                                                if (rc != SUCCEED)
// Function : LoadHistoryTable
                                                                                                          HandleErrorDBC(c_hdbc2);
//
                                                                                               history_rows_loaded++;
                                                                                               CheckForCommit(c hdbc2, c hstmt2,
                                                                           history_rows_loaded, "history", &history_time_start->time_start);
void LoadHistoryTable(LOADER_TIME_STRUCT *history_time_start)
          int
                 i;
  long
          c_id;
  short
          c d id;
  short
          c_w_id;
          double
                    h amount;
  char
          h_data[H_DATA_LEN+1];
          char
                              h date[H DATE LEN+1];
                                                                           // Function : LoadOrders
          RETCODE
  rc = bcp bind(c hdbc2, (BYTE *) &c id, 0, SQL VARLEN DATA, NULL,
0, SQLINT4, 1);
          if (rc != SUCCEED)
```

```
void LoadOrders()
          LOADER TIME STRUCT
                                       orders time start;
          LOADER_TIME_STRUCT
                                       new_order_time_start;
          LOADER_TIME_STRUCT
                                       order_line_time_start;
                                         w id;
  short
                    d_id;
          DWORD
dwThreadID[MAX\_ORDER\_THREADS];
          HANDLE
hThread[MAX_ORDER_THREADS];
                                         name[20];
          char
          RETCODE
rc;
          char
bcphint[128];
          // seed with unique number
          seed(6);
          printf("Loading orders...\n");
          // if build index before load...
          if ((aptr->build index == 1) && (aptr->index order == 1))
                              BuildIndex("idxordcl");
                              BuildIndex("idxnodcl");
                              BuildIndex("idxodlcl");
          }
          // initialize bulk copy
          sprintf(name, "%s..%s", aptr->database, "orders");
          rc = bcp init(o hdbc1, name, NULL, "logs\\orders.err", DB IN);
          if (rc != SUCCEED)
                    HandleErrorDBC(o hdbc1);
          if ((aptr->build index == 1) && (aptr->index order == 1))
                    sprintf(bcphint, "tablock, order (o_w_id, o_d_id, o_id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 30000));
                    rc = bcp_control(o_hdbc1, BCPHINTS, (void*) bcphint);
                    if (rc != SUCCEED)
                              HandleErrorDBC(o hdbc1);
          sprintf(name, "%s..%s", aptr->database, "new order");
          rc = bcp_init(o_hdbc2, name, NULL, "logs\\neword.err", DB_IN);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc2);
          if ((aptr->build index == 1) && (aptr->index order == 1))
                    sprintf(bcphint, "tablock, order (no w id, no d id,
no o id), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 9000));
                    rc = bcp control(o hdbc2, BCPHINTS, (void*) bcphint);
                    if (rc != SUCCEED)
                              HandleErrorDBC(o_hdbc2);
          }
          sprintf(name, "%s..%s", aptr->database, "order_line");
          rc = bcp_init(o_hdbc3, name, NULL, "logs\\ordline.err", DB_IN);
```

```
if (rc != SUCCEED)
                     HandleErrorDBC(o hdbc3);
  if ((aptr->build_index == 1) && (aptr->index_order == 1))
                     sprintf(bcphint, "tablock, order (ol w id, ol d id,
ol o id, ol number), ROWS PER BATCH = %u", (aptr->num warehouses *
300000));
                     rc = bcp control(o hdbc3, BCPHINTS, (void*) bcphint);
                     if (rc != SUCCEED)
                               HandleErrorDBC(o hdbc3);
          orders rows loaded
          new_order_rows_loaded = 0;
          order line rows loaded = 0;
          OrdersBufInit();
          orders_time_start.time_start = (TimeNow() / MILLI);
          new order time start.time start = (TimeNow() / MILLI);
          order_line_time_start.time_start = (TimeNow() / MILLI);
          for (w_id = (short)aptr->starting_warehouse; w_id <=
aptr->num_warehouses; w id++)
          {
                     for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE;
d id++)
                               OrdersBufLoad(d_id, w_id);
                               // start parallel loading threads here...
                               // start Orders table thread
                               printf("...Loading Order Table for: d id = %d,
w_id = %d\n'', d_id, w_id);
                               hThread[0] = CreateThread(NULL,
           0,
           (LPTHREAD START ROUTINE) LoadOrdersTable,
            &orders_time_start,
           0,
           &dwThreadID[0]);
                               if(hThread[0] == NULL)
                                          printf("Error, failed in creating
creating thread = 0.\n");
                                          exit(-1);
                               // start NewOrder table thread
                               printf("...Loading New-Order Table for: d_id
= \%d, w id = \%d\n", d_id, w_id);
                               hThread[1] = CreateThread(NULL,
           0,
```

```
(LPTHREAD START ROUTINE) LoadNewOrderTable,
           &new_order_time_start,
           &dwThreadID[1]);
                               if (hThread[1] == NULL)
                                          printf("Error, failed in creating
creating thread = 1.\n");
                                          exit(-1);
                               // start Order-Line table thread
                               printf("...Loading Order-Line Table for: d_id
= \%d, w id = \%d n'', d id, w id);
                               hThread[2] = CreateThread(NULL,
           (LPTHREAD_START_ROUTINE) LoadOrderLineTable,
           &order_line_time_start,
           0,
           &dwThreadID[2]);
                               if(hThread[2] == NULL)
                                          printf("Error, failed in creating
creating thread = 2.\n");
                                          exit(-1);
                               WaitForSingleObject( hThread[0], INFINITE
);
                               WaitForSingleObject( hThread[1], INFINITE
);
                               WaitForSingleObject( hThread[2], INFINITE
                               if(CloseHandle(hThread[0]) == FALSE)
                                          printf("Error, failed in closing
Orders thread handle with errno: %d\n", GetLastError());
                               if(CloseHandle(hThread[1]) == FALSE)
                                          printf("Error, failed in closing
NewOrder thread handle with errno: %d\n", GetLastError());
                               if(CloseHandle(hThread[2]) == FALSE)
                                          printf("Error, failed in closing
OrderLine thread handle with errno: %d\n", GetLastError());
```

```
printf("Finished loading orders.\n");
  return;
// Function : OrdersBufInit
// Clears shared buffer for ORDERS, NEWORDER, and ORDERLINE
void OrdersBufInit()
           int
          int
                                j;
           for (i=0;i<orders_per_district;i++)
                     orders_buf[i].o_id = 0;
                     orders_buf[i].o_d_id = 0;
                     orders buf[i].o w id = 0;
                     orders_buf[i].o_c_id = 0;
                     orders buf[i].o carrier id = 0;
                     orders_buf[i].o_ol_cnt = 0;
                     orders buf[i].o all local = 0;
                     for (j=0;j<=14;j++)
                                orders_buf[i].o_ol[j].ol = 0;
                                orders_buf[i].o_ol[j].ol_i_id = 0;
                                orders buf[i].o ol[j].ol supply w id = 0;
                                orders_buf[i].o_ol[j].ol_quantity = 0;
                                orders_buf[i].o_ol[j].ol_amount = 0;
                                strcpy(orders buf[i].o ol[j].ol dist info,"");
// Function : OrdersBufLoad
// Fills shared buffer for ORDERS, NEWORDER, and ORDERLINE
void OrdersBufLoad(int d id, int w id)
           int cust[ORDERS_PER_DISTRICT+1];
          long o_id;
           printf("...Loading Order Buffer for: d_id = %d, w id = %d\n",
                                d_id, w_id);
```

```
GetPermutation(cust, orders_per_district);
          for (o id=0;o id<orders per district;o id++)
                     // Generate ORDER and NEW-ORDER data
                     orders_buf[o_id].o_d_id = d_id;
                     orders_buf[o_id].o_w_id = w_id;
                     orders_buf[o_id].o_id = o_id+1;
                     orders_buf[o_id].o_c_id = cust[o_id+1];
                     orders_buf[o_id].o_ol_cnt = (short)RandomNumber(5L,
15L);
                     if (o id < first new order)
                                orders_buf[o_id].o_carrier_id =
(short)RandomNumber(1L, 10L);
                                orders_buf[o_id].o_all_local = 1;
                     else
                                orders_buf[o_id].o_carrier_id = 0;
                                orders_buf[o_id].o_all_local = 1;
                     for (ol=0; ol<orders buf[o id].o ol cnt; ol++)
                                orders_buf[o_id].o_ol[ol].ol = ol+1;
                                orders buf[o id].o ol[ol].ol i id =
RandomNumber(1L, max_items);
                                orders_buf[o_id].o_ol[ol].ol_supply_w_id =
w id;
                                orders_buf[o_id].o_ol[ol].ol_quantity = 5;
                                MakeAlphaString(24, 24,
OL_DIST_INFO_LEN, &orders_buf[o_id].o_ol[ol].ol_dist_info);
                                // Generate ORDER-LINE data
                                if (o_id < first_new_order)</pre>
orders_buf[o_id].o_ol[ol].ol_amount = 0;
                                           // Added to insure ol delivery d
set properly during load
FormatDate(&orders_buf[o_id].o_ol[ol].ol_delivery_d);
                                else
orders buf[o id].o ol[ol].ol amount = RandomNumber(1,999999)/100.0;
                                           // Added to insure ol delivery d
set properly during load
                                           // odbc datetime format
strcpy(orders\_buf[o\_id].o\_ol[ol].ol\_delivery\_d,"1899-12-31~00:00:00.000");\\
           }
```

```
// Function : LoadOrdersTable
void LoadOrdersTable(LOADER TIME STRUCT *orders time start)
          int
  long
          o id;
                   o_d_id;
          short
          short
                   o_w_id;
  long
          o_c_id;
  short
          o_carrier_id;
  short
          o_ol_cnt;
          o_all_local;
  short
                             o entry d[O ENTRY D LEN+1];
          char
          RETCODE
                                       rc;
          DBINT
                             rcint;
         // bind ORDER data
  rc = bcp_bind(o_hdbc1, (BYTE *) &o_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT4, 1);
          if (rc != SUCCEED)
                   HandleErrorDBC(o_hdbc1);
  rc = bcp_bind(o_hdbc1, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 2);
         if (rc != SUCCEED)
                   HandleErrorDBC(o_hdbc1);
  rc = bcp_bind(o_hdbc1, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 3);
         if (rc != SUCCEED)
                   HandleErrorDBC(o hdbc1);
  rc = bcp_bind(o_hdbc1, (BYTE *) &o_c_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT4, 4);
         if (rc != SUCCEED)
                   HandleErrorDBC(o hdbc1);
         rc = bcp bind(o hdbc1, (BYTE *) &o entry d, 0,
O_ENTRY_D_LEN, NULL, 0, SQLCHARACTER, 5);
         if (rc != SUCCEED)
                   HandleErrorDBC(o hdbc1);
  rc = bcp bind(o hdbc1, (BYTE *) &o carrier id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, 6);
          if (rc != SUCCEED)
                   HandleErrorDBC(o_hdbc1);
  rc = bcp_bind(o_hdbc1, (BYTE *) &o_ol_cnt, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 7);
          if (rc != SUCCEED)
                   HandleErrorDBC(o_hdbc1);
  rc = bcp_bind(o_hdbc1, (BYTE *) &o_all_local, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 8);
          if (rc != SUCCEED)
                   HandleErrorDBC(o_hdbc1);
  for (i = 0; i < orders_per_district; i++)
                            = orders_buf[i].o_id;
                   o_id
                   o_d_id
                             = orders_buf[i].o_d_id;
```

```
o w id
                              = orders_buf[i].o_w_id;
                             = orders_buf[i].o_c_id;
                    o c id
                                                                              rc = bcp_bind(o_hdbc2, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA,
                    o carrier id = orders buf[i].o carrier id;
                                                                           NULL, 0, SQLINT2, 2);
                                                                                     if (rc != SUCCEED)
                    o_ol_cnt = orders_buf[i].o_ol_cnt;
                    o_all_local = orders_buf[i].o_all_local;
                                                                                                HandleErrorDBC(o_hdbc2);
                    FormatDate(&o entry d);
                                                                              rc = bcp bind(o hdbc2, (BYTE *) &o w id, 0, SQL VARLEN DATA,
                                                                           NULL, 0, SQLINT2, 3);
                                                                                     if (rc != SUCCEED)
                    // send data to server
                                                                                                HandleErrorDBC(o hdbc2);
                    rc = bcp sendrow(o hdbc1);
                    if (rc != SUCCEED)
                              HandleErrorDBC(o_hdbc1);
                                                                                      for (i = first_new_order; i < last_new_order; i++)
                    orders_rows_loaded++;
                                                                                                o_id = orders_buf[i].o_id;
                    CheckForCommit(o hdbc1, o hstmt1,
                                                                                                o d id = orders_buf[i].o_d_id;
orders_rows_loaded, "orders", &orders_time_start->time_start);
                                                                                                o_w_id = orders_buf[i].o_w_id;
                                                                                                rc = bcp_sendrow(o_hdbc2);
          // rcint = bcp_batch(o_hdbc1);
                                                                                                if (rc != SUCCEED)
          // if (rcint < 0)
                                                                                                          HandleErrorDBC(o hdbc2);
                    HandleErrorDBC(o_hdbc1);
                                                                                                new order rows loaded++;
          if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
                                                                                                CheckForCommit(o_hdbc2, o_hstmt2,
                                                                           new_order_rows_loaded, "new_order", &new_order_time_start->time_start);
                    rcint = bcp_done(o_hdbc1);
                    if (rcint < 0)
                              HandleErrorDBC(o hdbc1);
                                                                                     // rcint = bcp_batch(o_hdbc2);
                                                                                     // if (rcint < 0)
                    SQLFreeStmt(o hstmt1, SQL DROP);
                                                                                                HandleErrorDBC(o hdbc2);
                    SQLDisconnect(o_hdbc1);
                                                                                     if ((o_w_id == aptr->num_warehouses) && (o d id == 10))
                    SQLFreeConnect(o hdbc1);
                    // if build index after load...
                                                                                                rcint = bcp_done(o_hdbc2);
                    if ((aptr->build index == 1) && (aptr->index order ==
                                                                                                if (rcint < 0)
0))
                                                                                                          HandleErrorDBC(o_hdbc2);
                              BuildIndex("idxordcl");
                                                                                                SQLFreeStmt(o_hstmt2, SQL_DROP);
                    // build non-clustered index
                                                                                                SQLDisconnect(o hdbc2);
                    if (aptr->build_index == 1)
                                                                                                SQLFreeConnect(o_hdbc2);
                              BuildIndex("idxordnc");
                                                                                                // if build index after load...
                                                                                                if ((aptr->build_index == 1) && (aptr->index_order ==
                                                                           0))
}
                                                                                                          BuildIndex("idxnodcl");
// Function : LoadNewOrderTable
void LoadNewOrderTable(LOADER TIME STRUCT *new order time start)
                                                                           // Function : LoadOrderLineTable
 int
         i;
                                                                           //=
  long
          o id;
  short
          o_d_id;
                                                                            void LoadOrderLineTable(LOADER TIME STRUCT *order line time start)
  short
          o w id;
          RETCODE
                                         rc;
          DBINT
                              rcint;
                                                                                      int
                                                                                             i,j;
                                                                              long
                                                                                      o_id;
          // Bind NEW-ORDER data
                                                                                                o\_d\_id;
                                                                                      short
                                                                                      short
                                                                                                o_w_id;
  rc = bcp_bind(o_hdbc2, (BYTE *) &o_id, 0, SQL_VARLEN_DATA,
                                                                              long
                                                                                      ol:
NULL, 0, SQLINT4, 1);
                                                                                      long
                                                                                                ol i id;
          if (rc != SUCCEED)
                                                                              short
                                                                                      ol_supply_w_id;
                    HandleErrorDBC(o hdbc2);
                                                                              short
                                                                                      ol_quantity;
```

```
double
           ol amount;
                                                                                                         ol_supply_w_id =
  char
          ol dist info[DIST INFO LEN+1];
                                                                           orders_buf[i].o_ol[j].ol_supply_w_id;
                              ol_delivery_d[OL_DELIVERY_D_LEN+1];
          char
                                                                                                         ol_quantity
          RETCODE
                                                                           orders_buf[i].o_ol[j].ol_quantity;
          DBINT
                                                                                                         ol amount
                              reint:
                                                                           orders buf[i].o ol[j].ol amount;
          // bind ORDER-LINE data
  rc = bcp_bind(o_hdbc3, (BYTE *) &o_id, 0, SQL_VARLEN_DATA,
                                                                           strcpy(ol_delivery_d,orders_buf[i].o_ol[j].ol_delivery_d);
NULL, 0, SQLINT4, 1);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);
                                                                           strcpy(ol_dist_info,orders_buf[i].o_ol[j].ol_dist_info);
  rc = bcp bind(o hdbc3, (BYTE *) &o d id, 0, SQL VARLEN DATA,
                                                                                                         rc = bcp sendrow(o hdbc3);
NULL, 0, SQLINT2, 2);
                                                                                                         if (rc != SUCCEED)
                                                                                                                   HandleErrorDBC(o_hdbc3);
          if (rc != SUCCEED)
                    HandleErrorDBC(o hdbc3);
                                                                                                         order line rows loaded++;
  rc = bcp_bind(o_hdbc3, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA,
                                                                                                         CheckForCommit(o_hdbc3, o_hstmt3,
NULL, 0, SQLINT2, 3);
                                                                           order_line_rows_loaded, "order_line", &order_line_time_start->time_start);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);
  rc = bcp_bind(o_hdbc3, (BYTE *) &ol, 0, SQL_VARLEN_DATA, NULL,
                                                                                     // reint = bcp_batch(o_hdbc3);
0, SQLINT4, 4);
          if (rc != SUCCEED)
                                                                                     // if (rcint \leq 0)
                    HandleErrorDBC(o_hdbc3);
                                                                                               HandleErrorDBC(o hdbc3);
  rc = bcp_bind(o_hdbc3, (BYTE *) &ol_i_id, 0, SQL_VARLEN_DATA,
                                                                                     if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
NULL, 0, SQLINT4, 5);
          if (rc != SUCCEED)
                                                                                               rcint = bcp_done(o_hdbc3);
                    HandleErrorDBC(o hdbc3);
                                                                                               if (rcint < 0)
                                                                                                         HandleErrorDBC(o_hdbc3);
  rc = bcp_bind(o_hdbc3, (BYTE *) &ol_supply_w_id, 0,
SQL VARLEN DATA, NULL, 0, SQLINT2, 6);
                                                                                               SQLFreeStmt(o hstmt3, SQL DROP);
          if (rc != SUCCEED)
                                                                                               SQLDisconnect(o_hdbc3);
                    HandleErrorDBC(o hdbc3);
                                                                                               SQLFreeConnect(o hdbc3);
          rc = bcp bind(o hdbc3, (BYTE *) &ol delivery d, 0,
                                                                                               // if build index after load...
OL_DELIVERY_D_LEN, NULL, 0, SQLCHARACTER, 7);
                                                                                               if ((aptr->build_index == 1) && (aptr->index_order ==
          if (rc != SUCCEED)
                                                                           0))
                    HandleErrorDBC(o hdbc3);
                                                                                                         BuildIndex("idxodlcl");
  rc = bcp bind(o hdbc3, (BYTE *) &ol quantity, 0, SQL VARLEN DATA,
                                                                                     }
NULL, 0, SQLINT2, 8);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);
  rc = bcp bind(o hdbc3, (BYTE *) &ol amount, 0, SQL VARLEN DATA,
NULL, 0, SQLFLT8, 9);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);
                                                                           // Function : GetPermutation
  rc = bcp_bind(o_hdbc3, (BYTE *) ol_dist_info, 0, DIST_INFO_LEN,
NULL, 0, 0, 10);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);
                                                                           void GetPermutation(int perm[], int n)
          for (i = 0; i < orders_per_district; i++)
                                                                                     int i, r, t;
                    o_id = orders_buf[i].o_id;
                                                                                     for (i=1;i \le n;i++)
                    o d id = orders_buf[i].o_d_id;
                                                                                               perm[i] = i;
                    o_w_id = orders_buf[i].o_w_id;
                                                                                     for (i=1;i<=n;i++)
                    for (j=0; j < orders\_buf[i].o\_ol\_cnt; j++)
                                                                                               r = RandomNumber(i,n);
                                       = orders buf[i].o ol[j].ol;
                                                                                               t = perm[i];
                                         = orders\_buf[i].o\_ol[j].ol\_i\_id;
                                                                                               perm[i] = perm[r];
                              ol_i_id
                                                                                               perm[r] = t;
```

```
}
                                                                                 SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE,
                                                                        &henv);
}
                                                                                 SQLSetEnvAttr(henv, SQL_ATTR_ODBC_VERSION,
                                                                        (void*)SQL_OV_ODBC3, 0 );
                                                                                 SQLAllocHandle(SQL_HANDLE_DBC, henv, &i_hdbc1);
                                                                                 SQLAllocHandle(SQL_HANDLE_DBC, henv, &w_hdbc1); SQLAllocHandle(SQL_HANDLE_DBC, henv, &c_hdbc1);
// Function : CheckForCommit
                                                                                 SQLAllocHandle(SQL HANDLE DBC, henv, &c hdbc2);
                                                                                 SQLAllocHandle(SQL_HANDLE_DBC, henv, &o_hdbc1);
                                                                                 SQLAllocHandle(SQL_HANDLE_DBC, henv, &o_hdbc2);
                                                                                 SQLAllocHandle(SQL HANDLE DBC, henv, &o hdbc3);
void CheckForCommit(HDBC hdbc,
                                                                                 SQLSetConnectAttr(i_hdbc1, SQL_COPT_SS_BCP, (void
                                                 HSTMT hstmt,
                                       int rows loaded,
                                                                        *)SQL_BCP_ON, SQL_IS_INTEGER );
                                                                                 SQLSetConnectAttr(w hdbc1, SQL COPT SS BCP, (void
                                                char *table name,
                                                                        *)SQL_BCP_ON, SQL_IS_INTEGER );
                                       long *time_start)
                                                                                 SQLSetConnectAttr(c_hdbc1, SQL_COPT_SS_BCP, (void
                                                                        *)SQL BCP ON, SQL IS INTEGER);
                                                                                 SQLSetConnectAttr(c_hdbc2, SQL_COPT_SS_BCP, (void
         time_end, time_diff;
  long
          // DBINT rcint;
                                                                        *)SQL BCP ON, SQL IS INTEGER);
                                                                                 SQLSetConnectAttr(o_hdbc1, SQL_COPT_SS_BCP, (void
                                                                        *)SOL BCP ON, SQL IS INTEGER);
  if (!(rows loaded % aptr->batch))
                                                                                 SQLSetConnectAttr(o_hdbc2, SQL_COPT_SS_BCP, (void
                                                                        *)SQL_BCP_ON, SQL_IS_INTEGER );
                   // reint = bcp batch(hdbc);
                                                                                 SQLSetConnectAttr(o hdbc3, SQL COPT SS BCP, (void
                                                                        *)SQL_BCP_ON, SQL_IS_INTEGER );
                   // if (rcint < 0)
                             HandleErrorDBC(hdbc);
                                                                                 // Open connections to SQL Server
                   time end = (TimeNow() / MILLI);
                   time_diff = time_end - *time_start;
                                                                                 // Connection 1
                   printf("-> Loaded %ld rows into %s in %ld sec - Total =
                                                                                 sprintf( szDriverString , "DRIVER={SQL
%d (%.2f rps)\n",
                                                                        Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s",
                             aptr->batch,
                             table_name,
                                                                        aptr->server,
                                       time diff,
                                                                                                                                    aptr->user,
                             rows_loaded,
                                       (float) aptr->batch / (time diff?
                                                                        aptr->password,
time diff: 1L));
                                                                        aptr->database );
                   *time start = time end;
                                                                                 rc = SQLSetConnectOption (i_hdbc1, SQL_PACKET_SIZE,
  }
                                                                        aptr->pack size);
                                                                                 if (rc != SUCCEED)
  return;
                                                                                           HandleErrorDBC(i hdbc1);
                                                                                 rc = SQLDriverConnect ( i_hdbc1,
                                                                                                                           NULL,
                                                                        (SQLCHAR*)&szDriverString[0],
                                                                                                                                   SQL_NTS,
// Function : OpenConnections
                                                                        (SQLCHAR*)&szDriverStringOut[0],
                                                                        sizeof(szDriverStringOut),
void OpenConnections()
                                                                        &cbDriverStringOut,
          RETCODE
                                                                        SOL DRIVER NOPROMPT);
                        rc:
                                                                                 if (rc != SUCCEED)
                                       szDriverString[300];
                                                                                           HandleErrorDBC(i_hdbc1);
          char
          char
                                       szDriverStringOut[1024];
          SQLSMALLINT
                                                                                 // Connection 2
                                       cbDriverStringOut;
                                                                                 sprintf( szDriverString , "DRIVER={SQL
                                                                        Server\;SERVER=\%s;UID=\%s;PWD=\%s;DATABASE=\%s",
```

```
sprintf( szDriverString , "DRIVER={SQL
aptr->server,
                                                                       Server\;SERVER=\%s;UID=\%s;PWD=\%s;DATABASE=\%s",
                                                           aptr->user.
                                                                       aptr->server,
                                                                                                                                   aptr->user,
aptr->password,
aptr->database );
                                                                       aptr->password,
         rc = SQLSetConnectOption (w_hdbc1, SQL_PACKET_SIZE,
                                                                       aptr->database );
aptr->pack size);
         if (rc != SUCCEED)
                                                                                 rc = SQLSetConnectOption (c_hdbc2, SQL_PACKET_SIZE,
                   HandleErrorDBC(w_hdbc1);
                                                                       aptr->pack_size);
                                                                                 if (rc != SUCCEED)
                                                                                           HandleErrorDBC(c_hdbc2);
         rc = SQLDriverConnect (w_hdbc1,
NULL,
                                                                                 rc = SQLDriverConnect ( c_hdbc2,
(SQLCHAR*)&szDriverString[0],
                                                                       NULL,
SQL NTS,
                                                                       (SQLCHAR*)&szDriverString[0],
(SQLCHAR*)&szDriverStringOut[0],
                                                                       SQL_NTS,
sizeof(szDriverStringOut),
                                                                       (SQLCHAR*)&szDriverStringOut[0],
&cbDriverStringOut,
                                                                       sizeof(szDriverStringOut),
SQL_DRIVER_NOPROMPT);
                                                                       &cbDriverStringOut,
         if (rc != SUCCEED)
                                                                       SQL DRIVER NOPROMPT);
                   HandleErrorDBC(w_hdbc1);
                                                                                 if (rc != SUCCEED)
         // Connection 3
                                                                                           HandleErrorDBC(c_hdbc2);
         sprintf( szDriverString , "DRIVER={SQL
                                                                                 // Connection 5
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s",
                                                                                 sprintf( szDriverString , "DRIVER={SQL
                                                                       Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s",
aptr->server,
                                                           aptr->user,
                                                                       aptr->server,
aptr->password,
                                                                                                                                   aptr->user,
aptr->database );
                                                                       aptr->password,
         rc = SQLSetConnectOption (c_hdbc1, SQL_PACKET_SIZE,
                                                                       aptr->database );
aptr->pack size);
         if (rc != SUCCEED)
                                                                                 rc = SQLSetConnectOption (o_hdbc1, SQL_PACKET_SIZE,
                   HandleErrorDBC(c hdbc1);
                                                                       aptr->pack size);
                                                                                 if (rc != SUCCEED)
                                                                                           HandleErrorDBC(o_hdbc1);
         rc = SQLDriverConnect (c_hdbc1,
NULL,
                                                                                 rc = SQLDriverConnect (o_hdbc1,
(SQLCHAR*)&szDriverString[0],
                                                                       NULL,
                                                                       (SQLCHAR*)&szDriverString[0],
SQL_NTS,
(SQLCHAR*)&szDriverStringOut[0],
                                                                       SQL NTS,
sizeof(szDriverStringOut),
                                                                       (SQLCHAR*)&szDriverStringOut[0],
&cbDriverStringOut,
                                                                       sizeof(szDriverStringOut),
SQL DRIVER NOPROMPT);
                                                                       &cbDriverStringOut,
         if (rc != SUCCEED)
                                                                       SQL_DRIVER_NOPROMPT);
                   HandleErrorDBC(c_hdbc1);
                                                                                 if (rc != SUCCEED)
         // Connection 4
                                                                                           HandleErrorDBC(o_hdbc1);
```

```
// Connection 6
                                                                                              HandleErrorDBC(o_hdbc3);
          sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s",
aptr->server,
                                                             aptr->user,
                                                                          // Function name: BuildIndex
aptr->password,
aptr->database );
          rc = SQLSetConnectOption (o hdbc2, SQL PACKET SIZE,
                                                                          void BuildIndex(char *index script)
aptr->pack_size);
          if (rc != SUCCEED)
                                                                                    char
                                                                                              cmd[256];
                    HandleErrorDBC(o_hdbc2);
                                                                                    printf("Starting index creation: %s\n",index script);
          rc = SQLDriverConnect (o_hdbc2,
                                                                                    sprintf(cmd, "isql -S%s -U%s -P%s -e -i%s\\%s.sql > logs\\%s.log",
NULL,
                                                                                                                  aptr->server,
                                                                                                                  aptr->user.
(SQLCHAR*)&szDriverString[0],
                                                                                                                  aptr->password,
                                                                                                                  aptr->index_script_path,
                                                                                                                  index script,
SQL_NTS,
                                                                                                                  index_script);
(SQLCHAR*)&szDriverStringOut[0],
                                                                                    system(cmd);
sizeof(szDriverStringOut),
                                                                                    printf("Finished index creation: %s\n",index script);
&cbDriverStringOut,
SQL_DRIVER_NOPROMPT);
          if (rc != SUCCEED)
                                                                          void HandleErrorDBC (SQLHDBC hdbc1)
                    HandleErrorDBC(o hdbc2);
          // Connection 7
                                                                                    SQLCHAR
                                                                                                                  SqlState[6],
                                                                          Msg[SQL_MAX_MESSAGE_LENGTH];
          sprintf( szDriverString , "DRIVER={SQL
                                                                                    SQLINTEGER NativeError;
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s",
                                                                                    SQLSMALLINT i, MsgLen;
                                                                                    SQLRETURN rc2;
aptr->server,
                                                                                    char
                                                                                                        timebuf[128];
                                                                                                        datebuf[128];
                                                             aptr->user,
                                                                                    char
                                                                                    FILE
                                                                                                        *fp1;
aptr->password,
                                                                                    i = 1;
                                                                                    while (( rc2 = SQLGetDiagRec(SQL_HANDLE_DBC, hdbc1, i,
aptr->database );
                                                                          SqlState, &NativeError,
          rc = SQLSetConnectOption (o_hdbc3, SQL_PACKET_SIZE,
                                                                                                                    Msg, sizeof(Msg), &MsgLen))
                                                                          != SQL_NO_DATA )
aptr->pack_size);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);
                                                                                              sprintf( szLastError , "%s" , Msg );
          rc = SQLDriverConnect (o_hdbc3,
                                                                                              _strtime(timebuf);
NULL,
                                                                                              strdate(datebuf);
(SQLCHAR*)&szDriverString[0],
                                                                                              printf( "[%s : %s] %s\n" , datebuf, timebuf, szLastError);
                                                                                              fp1 = fopen("logs\\tpccldr.err","w");
SQL NTS,
                                                                                              if(fp1 == NULL)
(SQLCHAR*)&szDriverStringOut[0],
                                                                                                        printf("ERROR: Unable to open errorlog
                                                                          file.\n");
sizeof(szDriverStringOut),
                                                                                              else
&cbDriverStringOut,
                                                                                                        fprintf(fp1, "[%s: %s] %s\n", datebuf,
                                                                          timebuf, szLastError);
SQL_DRIVER_NOPROMPT);
                                                                                                        fclose(fp1);
          if (rc != SUCCEED)
```

```
i++;
}
void HandleErrorSTMT (HSTMT hstmt1)
          SQLCHAR
                                         SqlState[6],
Msg[SQL\_MAX\_MESSAGE\_LENGTH];
          SQLINTEGER NativeError;
          SQLSMALLINT i, MsgLen;
          SQLRETURN rc2;
          char
                              timebuf[128];
                              datebuf[128];
          char
          FILE
                              *fp1;
          i = 1
          while (( rc2 = SQLGetDiagRec(SQL HANDLE STMT, hstmt1, i,
SqlState, &NativeError,
                                          Msg, sizeof(Msg), &MsgLen))
!= SQL_NO_DATA)
                    sprintf( szLastError , "%s" , Msg );
                     _strtime(timebuf);
                    strdate(datebuf);
                    printf( "[%s : %s] %s\n" , datebuf, timebuf, szLastError);
                    fp1 = fopen("logs\\tpccldr.err","w");
                    if (fp1 == NULL)
                              printf("ERROR: Unable to open errorlog
file.\n");
                    else
                              fprintf(fp1, "[%s: %s] %s\n", datebuf,
timebuf, szLastError);
                              fclose(fp1);
                    i++:
}
void FormatDate ( char* szTimeCOutput )
          struct tm when;
          time_t now;
          time( &now );
          when = *localtime( &now );
          mktime( &when );
          // odbc datetime format
          strftime( szTimeCOutput , 30 , "%Y-%m-%d %H:%M:%S.000",
&when);
          return;
```

```
// Function : CheckSQL
void CheckSQL()
         RETCODE
                       rc:
                                     szDriverString[300];
         char
                                     szDriverStringOut[1024];
         char
                                              SQLBuildFlag;
         int
         char
                                     resp;
         SQLSMALLINT
                                     cbDriverStringOut;
         SQLCHAR
                                              SQLVersion[19];
         SQLINTEGER
                                     SQLVersionInd;
         SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE,
&henv);
         SQLSetEnvAttr(henv, SQL_ATTR_ODBC_VERSION,
(void*)SQL OV ODBC3, 0);
         SQLAllocHandle(SQL HANDLE DBC, henv, &v hdbc);
         SQLSetConnectAttr(v_hdbc, SQL_COPT_SS_BCP, (void
*)SQL_BCP_ON, SQL_IS_INTEGER );
         // Open connection to SQL Server
         sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s",
aptr->server,
                                                         aptr->user,
aptr->password );
         if ( SQLSetConnectAttr( v_hdbc, SQL_ATTR_PACKET_SIZE,
(SQLPOINTER)aptr->pack_size, SQL_IS_UINTEGER) != SQL_SUCCESS)
                  HandleErrorDBC(v hdbc);
         rc = SQLDriverConnect (v hdbc,
                                                NULL,
(SQLCHAR*)&szDriverString[0],
                                                        SQL NTS,
(SQLCHAR*)&szDriverStringOut[0],
sizeof(szDriverStringOut),
&cbDriverStringOut,
SQL_DRIVER_NOPROMPT);
         if ((rc != SQL_SUCCESS) && (rc !=
SQL_SUCCESS_WITH_INFO))
                  HandleErrorDBC(v_hdbc);
```

```
if ( SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt)
!= SQL SUCCESS)
                    HandleErrorSTMT(v hstmt);
          rc = SQLBindCol(v_hstmt, 4, SQL_C_CHAR, &SQLVersion,
sizeof(SQLVersion), &SQLVersionInd);
          // issue SQL Server extended stored procedure (xp msver) to
determine installed version
          rc = SQLExecDirect(v hstmt, "EXECUTE xp msver
ProductVersion", SQL NTS);
          if ((rc != SQL_SUCCESS) && (rc !=
SQL_SUCCESS_WITH_INFO))
                    HandleErrorSTMT(v hstmt);
          rc = SQLFetch(v_hstmt);
          if (rc != SQL_SUCCESS)
                    HandleErrorDBC(v_hdbc);
          // Check build number to ensure 8.00.194 or higher
          SQLBuildFlag = 1;
          // first check the Major version
          if (SQLVersion[0] == '8')
                    if (( SQLVersion[2] == '0') & ( SQLVersion[3] == '0' ) )
                              if (SQLVersion[5] == '1')
                                         if ( (SQLVersion[6] == '9') &
(SQLVersion[7] == '4')
                                                   SQLBuildFlag = 0;
                                                   printf("You are using
SQL Server version = \%9s\n', SQLVersion;
                                         else
                                                   SQLBuildFlag = 1;
                              else
                                         if (SQLVersion[5] == '3')
                                                   if ((SQLVersion[6]>=
53) & (SQLVersion[7] >= 48))
SQLBuildFlag = 0;
                                                             printf("You
are using SQL Server version = \%9s\n\n", SQLVersion);
                                                   else
SQLBuildFlag = 1;
                    }
          else
```

```
SQLBuildFlag = 1;
         if (SQLBuildFlag == 1)
                   printf("NOTE: The SQL Server version you are using is
not supported\n");
                   printf("for TPC-C benchmarking. You currently have
SQL Server version %9s\n",SQLVersion);
                   printf("installed. Please upgrade to Microsoft SQL
Server 2000 (8.00.0194) or better.\n");
                   printf("and re-run the SETUP program.\n\n");
                   printf("Do you wish to continue with setup? (Y/N): ");
                   resp = getchar();
                   if ((resp == 'N') | (resp == 'n'))
                             printf("\nSetup Aborted!\n");
                             exit(1);
         SQLFreeHandle(SQL HANDLE STMT, v hstmt);
         SQLDisconnect(v hdbc);
         SQLFreeHandle(SQL HANDLE DBC, v hdbc);
         return;
// Function : CheckDataBase
void CheckDataBase()
         RETCODE
                        rc;
                                       szDriverString[300];
         char
                                       szDriverStringOut[1024];
         char
                                       TablesBitMap[9] =
         char
{"000000000"};
                                                 i, ExitFlag;
         SQLSMALLINT
                                       cbDriverStringOut;
         SQLCHAR
                                                 TabName[10];
         SQLINTEGER
                                       TabNameInd, TabCount,
TabCountInd;
         ExitFlag = 0;
         SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE,
&henv);
         SQLSetEnvAttr(henv, SQL ATTR ODBC VERSION,
(void*)SQL_OV_ODBC3, 0);
         SQLAllocHandle(SQL_HANDLE_DBC, henv, &v_hdbc);
         SQLSetConnectAttr(v hdbc, SQL COPT SS BCP, (void
*)SQL_BCP_ON, SQL_IS_INTEGER );
```

```
// Open connection to SQL Server
          sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s",
aptr->server,
                                                            aptr->user,
aptr->password,
aptr->database );
         rc = SQLSetConnectAttr( v hdbc, SQL ATTR PACKET SIZE,
(SQLPOINTER)aptr->pack_size, SQL_IS_UINTEGER);
          if (rc != SQL SUCCESS)
                   HandleErrorDBC(v hdbc);
          rc = SQLDriverConnect (v_hdbc,
                                                   NULL,
(SQLCHAR*)&szDriverString[0],
                                                           SQL NTS,
(SQLCHAR*)&szDriverStringOut[0],
sizeof(szDriverStringOut),
&cbDriverStringOut,
SQL DRIVER NOPROMPT);
         // if the rc is SQL_ERROR, the the TPCC database probably does
not exist
          if (rc == SQL ERROR)
                    printf("The database TPCC does not appear to exist!\n");
                   printf("\nCheck LOGS\\ directory for database creation
errors.\n");
                   // cleanup database connections and handles
                    SQLFreeHandle(SQL HANDLE STMT, v hstmt);
                    SQLDisconnect(v hdbc);
                    SQLFreeHandle(SQL HANDLE DBC, v hdbc);
                   // since there is not a database, exit back to SETUP.CMD
                   exit(1);
          }
          if ( SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt)
!= SQL SUCCESS)
                   HandleErrorDBC(v_hdbc);
         if (SQLBindCol(v_hstmt, 1, SQL_C_ULONG, &TabCount, 0,
&TabCountInd) != SQL_SUCCESS )
                   HandleErrorSTMT(v hstmt);
          // count the number of user tables from sysobjects
         rc = SQLExecDirect(v_hstmt, "select count(*) from sysobjects
where xtype = \U\, SQL NTS);
          if ((rc != SQL_SUCCESS) && (rc !=
SQL SUCCESS WITH INFO))
                    HandleErrorSTMT(v_hstmt);
          if ( SQLFetch(v_hstmt) != SQL_SUCCESS )
                   HandleErrorSTMT(v_hstmt);
         // if the number of tables is less than 9, select all the user tables in
TPCC
```

```
if (TabCount != 9)
                     SQLFreeHandle(SQL HANDLE STMT, v hstmt);
                     SQLAllocHandle(SQL\_HANDLE\_STMT, v\_hdbc\;,
&v hstmt);
                     if (SQLBindCol(v hstmt, 1, SQL C CHAR,
&TabName, sizeof(TabName), &TabNameInd) != SQL SUCCESS)
                                HandleErrorSTMT(v hstmt);
                     // select the list of user tables into a result set
                     rc = SQLExecDirect(v hstmt, "select * from sysobjects
where xtype = \U\, SQL_NTS);
                     if ((rc!= SQL SUCCESS) && (rc!=
SQL_SUCCESS_WITH_INFO))
                                HandleErrorSTMT(v hstmt);
                     // go through the result set and set the bitmap for each
found table
                     // set the bitmap to '1' if the table name is found
                     while ((rc = SQLFetch(v hstmt)) != SQL NO DATA)
                                switch( TabName[0] )
                                case 'w':
                                           TablesBitMap[0] = '1';
                                           break;
                                case 'd'-
                                           TablesBitMap[1] = '1';
                                           break;
                                case 'c':
                                           TablesBitMap[2] = '1';
                                           break;
                                case 'h':
                                           TablesBitMap[3] = '1';
                                           break;
                                case 'n':
                                           TablesBitMap[4] = '1';
                                           break;
                                case 'o':
                                           if (TabName[5] = 's')
                                                      TablesBitMap[5] = '1';
                                           if (TabName[5] = ' ')
                                                      TablesBitMap[6] = '1';
                                           break:
                                case 'i':
                                           TablesBitMap[7] = '1';
                                           break;
                                case 's':
                                           TablesBitMap[8] = '1';
                                           break;
                     // a '0' ExitFlag means do NOT exit the loader early, a '1'
means exit the loader early
                     ExitFlag = 0;
                     // interate through the bitmap to display which table(s) is
actually missing
                     for (i = 0; i \le 8; i++)
                                switch(i)
                                case 0:
                                           if(TablesBitMap[i] == '0')
```

```
printf("The Warehouse
                                                                                                                       break;
table is missing or damaged.\n");
                                                    ExitFlag = 1;
                                          break;
                                                                                                  // if one or more tables are missing, display message and
                               case 1:
                                                                             exit the loader
                                          if (TablesBitMap[i] == '0')
                                                                                                  if(ExitFlag = 1)
                                                                                                             printf("\nExiting TPC-C Loader!\n");
                                                    printf("The District
table is missing or damaged.\n");
                                                                                                             printf("\nCheck LOGS\\ directory for
                                                    ExitFlag = 1;
                                                                             database\n");
                                                                                                             printf("or table creation errors.\n");
                                          break;
                               case 2:
                                                                                                             // cleanup database connections and handles
                                          if (TablesBitMap[i] == '0')
                                                                                                             SQLFreeHandle(SQL HANDLE STMT,
                                                                             v hstmt);
                                                    printf("The Customer
                                                                                                             SQLDisconnect(v_hdbc);
table is missing or damaged.\n");
                                                                                                             SQLFreeHandle(SQL_HANDLE_DBC,
                                                    ExitFlag = 1;
                                                                             v hdbc);
                                          break;
                                                                                                             exit(1);
                               case 3:
                                          if (TablesBitMap[i] == '0')
                                                                                        // cleanup database connections and handles
                                                    printf("The History
table is missing or damaged.\n");
                                                                                        SQLFreeHandle(SQL HANDLE STMT, v hstmt);
                                                                                        SQLDisconnect(v_hdbc);
                                                    ExitFlag = 1;
                                                                                        SQLFreeHandle(SQL HANDLE DBC, v hdbc);
                                          break;
                               case 4:
                                                                                        return;
                                          if (TablesBitMap[i] == '0')
                                                    printf("The New Order
table is missing or damaged.\n");
                                                                             tpccldr.mak
                                                    ExitFlag = 1;
                                                                             # Microsoft Developer Studio Generated NMAKE File, Format Version 4.10
                                          break;
                                                                             # ** DO NOT EDIT **
                               case 5:
                                          if (TablesBitMap[i] == '0')
                                                                             # TARGTYPE "Win32 (x86) Console Application" 0x0103
                                                    printf("The Orders table
                                                                             !IF "$(CFG)" == ""
is missing or damaged.\n");
                                                                             CFG=tpccldr - Win32 Debug
                                                    ExitFlag = 1;
                                                                             !MESSAGE No configuration specified. Defaulting to tpccldr - Win32 Debug.
                                                                             !ENDIF
                                          break;
                               case 6:
                                                                             !IF "$(CFG)" != "tpccldr - Win32 Release" && "$(CFG)" !=\
                                          if (TablesBitMap[i] == '0')
                                                                              "tpccldr - Win32 Debug"
                                                                             !MESSAGE Invalid configuration "$(CFG)" specified.
                                                    printf("The Order Line
                                                                             !MESSAGE You can specify a configuration when running NMAKE on this
table is missing or damaged.\n");
                                                                             makefile
                                                    ExitFlag = 1;
                                                                             !MESSAGE by defining the macro CFG on the command line. For example:
                                                                             !MESSAGE
                                          break;
                                                                             !MESSAGE NMAKE /f "tpccldr.mak" CFG="tpccldr - Win32 Debug"
                               case 7:
                                                                             !MESSAGE
                                          if (TablesBitMap[i] == '0')
                                                                             !MESSAGE Possible choices for configuration are:
                                                                             !MESSAGE
                                                    printf("The Item table is
                                                                             !MESSAGE "tpccldr - Win32 Release" (based on "Win32 (x86) Console
missing or damaged.\n");
                                                                             Application")
                                                     ExitFlag = 1;
                                                                             !MESSAGE "tpccldr - Win32 Debug" (based on "Win32 (x86) Console
                                                                             Application")
                                          break;
                                                                             !MESSAGE
                               case 8:
                                                                             !ERROR An invalid configuration is specified.
                                          if (TablesBitMap[i] == '0')
                                                                             !ENDIF
                                                    printf("The Stock table
                                                                             !IF "\$(OS)" == "Windows NT"
is missing or damaged.\n");
                                                                             NULL=
                                                    ExitFlag = 1;
                                                                             !ELSE
```

```
NULL=nul
                                                                        winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib\
!ENDIF
                                                                        uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none\
/machine:I386 /out:"$(OUTDIR)/tpccldr.exe"
LINK32_OBJS=
                                                                                  "$(INTDIR)\getargs.obj" \
# Begin Project
                                                                                 "$(INTDIR)\random.obj" \
# PROP Target Last Scanned "tpccldr - Win32 Debug"
                                                                                 "$(INTDIR)\strings.obj" \
RSC=rc.exe
                                                                                 "$(INTDIR)\time.obj"
CPP=cl.exe
                                                                                 "$(INTDIR)\tpccldr.obj"
!IF "$(CFG)" == "tpccldr - Win32 Release"
                                                                        "$(OUTDIR)\tpccldr.exe" : "$(OUTDIR)" $(DEF_FILE) $(LINK32_OBJS)
# PROP BASE Use MFC 0
                                                                         $(LINK32) @<<
                                                                        $(LINK32 FLAGS) $(LINK32 OBJS)
# PROP BASE Use Debug Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate Dir "Release"
# PROP BASE Target Dir "
                                                                       !ELSEIF "$(CFG)" == "tpccldr - Win32 Debug"
# PROP Use MFC 0
# PROP Use_Debug_Libraries 0
                                                                       # PROP BASE Use_MFC 0
# PROP Output Dir "bin"
                                                                       # PROP BASE Use Debug_Libraries 1
# PROP Intermediate Dir "objects"
                                                                       # PROP BASE Output Dir "Debug"
                                                                       # PROP BASE Intermediate_Dir "Debug"
# PROP Target_Dir "
OUTDIR=.\bin
                                                                       # PROP BASE Target Dir "
                                                                       # PROP Use_MFC 0
INTDIR=.\objects
                                                                       # PROP Use Debug_Libraries 1
ALL: "$(OUTDIR)\tpccldr.exe"
                                                                       # PROP Output_Dir "bin"
                                                                       # PROP Intermediate_Dir "objects"
# PROP Target_Dir ""
CLEAN:
                                                                       OUTDIR=.\bin
          -@erase "$(INTDIR)\getargs.obj"
          -@erase "$(INTDIR)\random.obj"
                                                                       INTDIR=.\objects
          -@erase "$(INTDIR)\strings.obj"
          -@erase "$(INTDIR)\time.obj"
                                                                       ALL: "$(OUTDIR)\tpccldr.exe"
          -@erase "$(INTDIR)\tpccldr.obj"
          -@erase "$(OUTDIR)\tpccldr.exe"
                                                                       CLEAN:
                                                                                 -@erase "$(INTDIR)\getargs.obj"
"$(OUTDIR)":
                                                                                 -@erase "$(INTDIR)\random.obj"
                                                                                 -@erase "$(INTDIR)\strings.obj'
  if not exist "$(OUTDIR)/$(NULL)" mkdir "$(OUTDIR)"
                                                                                 -@erase "$(INTDIR)\time.obj"
                                                                                 -@erase "$(INTDIR)\tpccldr.obj"
  if not exist "$(INTDIR)/$(NULL)" mkdir "$(INTDIR)"
                                                                                 -@erase "$(INTDIR)\vc40.idb"
                                                                                 -@erase "$(INTDIR)\vc40.pdb"
# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D
                                                                                 -@erase "$(OUTDIR)\tpccldr.exe"
 CONSOLE" /YX /c
#ADD CPP /nologo /MT /W3 /GX /O2 /I "c:\mssql\dblib\include" /D
                                                                        "$(OUTDIR)"
"NDEBUG" /D "WIN32" /D "_CONSOLE" /D "DBNTWIN32" /c
                                                                         if not exist "$(OUTDIR)/$(NULL)" mkdir "$(OUTDIR)"
# SUBTRACT CPP /YX
                                                                        "$(INTDIR)" :
CPP_PROJ=/nologo /MT /W3 /GX /O2 /I "c:\mssql\dblib\include" /D
"NDEBUG" /D\
                                                                          if not exist "$(INTDIR)/$(NULL)" mkdir "$(INTDIR)"
"WIN32" /D " CONSOLE" /D "DBNTWIN32" /Fo"$(INTDIR)/" /c
CPP_OBJS=.\objects/
                                                                       # ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG"
CPP SBRS=.\.
                                                                       /D " CONSOLE" /YX /c
# ADD BASE RSC /l 0x409 /d "NDEBUG"
                                                                       # ADD CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /I "c:\mssql\dblib\include" /D
# ADD RSC /I 0x409 /d "NDEBUG"
                                                                       " DEBUG" /D "WIN32" /D " CONSOLE" /D "DBNTWIN32" /c
BSC32=bscmake.exe
                                                                       # SUBTRACT CPP /YX
# ADD BASE BSC32 /nologo
                                                                       CPP PROJ=/nologo /MTd /W3 /Gm /GX /Zi /Od /I "c:\mssql\dblib\include" /D\
                                                                        " DEBUG" /D "WIN32" /D " CONSOLE" /D "DBNTWIN32"
# ADD BSC32 /nologo
BSC32 FLAGS=/nologo /o"$(OUTDIR)/tpccldr.bsc"
                                                                       /Fo"$(INTDIR)/"\
BSC32 SBRS=\
                                                                        /Fd"$(INTDIR)/"/c
                                                                       CPP_OBJS=.\objects/
LINK32=link.exe
                                                                       CPP SBRS=.\.
                                                                       # ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib
                                                                       # ADD RSC /l 0x409 /d " DEBUG"
odbccp32.lib /nologo /subsystem:console /machine:I386
                                                                       BSC32=bscmake.exe
                                                                       # ADD BASE BSC32 /nologo
# ADD LINK32 c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib
                                                                       # ADD BSC32 /nologo
uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none
                                                                       BSC32_FLAGS=/nologo /o"$(OUTDIR)/tpccldr.bsc"
/machine:I386
                                                                       BSC32 SBRS=\
LINK32_FLAGS=c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib
gdi32.lib\
                                                                       LINK32=link.exe
```

```
"$(INTDIR)\random.obj": $(SOURCE) $(DEP CPP RANDO) "$(INTDIR)"
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib
                                                                $(CPP) $(CPP PROJ) $(SOURCE)
odbccp32.lib /nologo /subsystem:console /debug /machine:1386
# ADD LINK32 c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib
                                                              # End Source File
                                                              uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none /debug
                                                              /machine:I386
LINK32 FLAGS=c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib
                                                              # Begin Source File
gdi32.lib\
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib
                                                              SOURCE=.\src\strings.c
uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none /debug\
                                                              DEP_CPP_STRIN=\
/machine:I386 /out:"$(OUTDIR)/tpccldr.exe"
                                                                       ".\src\tpcc.h"\
LINK32 OBJS=
                                                                       "\mssql\dblib\include\sqldb.h"\
        "$(INTDIR)\getargs.obj" \
                                                                       "\mssql\dblib\include\sqlfront.h"\
        "$(INTDIR)\random.obj" \
        "$(INTDIR)\strings.obj" \
        "$(INTDIR)\time.obj" \
                                                               "$(INTDIR)\strings.obj" : $(SOURCE) $(DEP_CPP_STRIN) "$(INTDIR)"
        "$(INTDIR)\tpccldr.obi'
                                                                $(CPP) $(CPP_PROJ) $(SOURCE)
"$(OUTDIR)\tpccldr.exe": "$(OUTDIR)" $(DEF FILE) $(LINK32 OBJS)
                                                              # End Source File
 $(LINK32) @<<
 $(LINK32 FLAGS) $(LINK32 OBJS)
                                                              # Begin Source File
!ENDIF
                                                              SOURCE=.\src\time.c
                                                              DEP_CPP_TIME_=\
".\src\tpcc.h"\
.c{$(CPP OBJS)}.obj:
 $(CPP) $(CPP_PROJ) $<
                                                                       "\mssql\dblib\include\sqldb.h"\
.cpp{$(CPP_OBJS)}.obj:
                                                                       "\mssql\dblib\include\sqlfront.h"\
 $(CPP) $(CPP PROJ) $<
.cxx{$(CPP OBJS)}.obi:
                                                               "$(INTDIR)\time.obj": $(SOURCE) $(DEP_CPP_TIME_) "$(INTDIR)"
                                                                $(CPP) $(CPP PROJ) $(SOURCE)
 $(CPP) $(CPP PROJ) $<
.c{$(CPP SBRS)}.sbr:
 $(CPP) $(CPP_PROJ) $<
                                                              # End Source File
                                                              .cpp{$(CPP_SBRS)}.sbr:
                                                              $(CPP) $(CPP_PROJ) $<
                                                              # Begin Source File
                                                              SOURCE=.\src\tpccldr.c
.cxx{$(CPP SBRS)}.sbr:
 $(CPP) $(CPP PROJ) $<
                                                              DEP CPP TPCCL=\
                                                                       ".\src\tpcc.h"\
"\mssql\dblib\include\sqldb.h"\
"\mssql\dblib\include\sqlfront.h"\
# Begin Target
                                                               "$(INTDIR)\tpccldr.obj": $(SOURCE) $(DEP_CPP_TPCCL) "$(INTDIR)"
# Name "tpccldr - Win32 Release"
# Name "tpccldr - Win32 Debug"
                                                                $(CPP) $(CPP PROJ) $(SOURCE)
!IF "$(CFG)" == "tpccldr - Win32 Release"
                                                              # End Source File
!ELSEIF "$(CFG)" == "tpccldr - Win32 Debug"
                                                              !ENDIF
                                                              # Begin Source File
SOURCE=.\src\getargs.c
DEP CPP GETAR=\
                                                                       ".\src\tpcc.h"\
# Begin Source File
                                                                       "\mssql\dblib\include\sqldb.h"\
SOURCE=.\src\random.c
                                                                       "\mssql\dblib\include\sqlfront.h"\
DEP_CPP_RANDO=\
        ".\src\tpcc.h"\
                                                               "$(INTDIR)\getargs.obj" : $(SOURCE) $(DEP_CPP_GETAR) "$(INTDIR)"
        "\mssql\dblib\include\sqldb.h"\
        "\mssql\dblib\include\sqlfront.h"\
                                                                $(CPP) $(CPP PROJ) $(SOURCE)
```

# End Source File # End Target # End Project ####################################	
######################################	

### **Appendix C: Tunable Parameters**

# Microsoft Windows 2000 Server Configuration Parameters

#### Microsoft Windows 2000 Server Services

Server Configuration Parameters

Microsoft Windows 2000 Server Configuration

The following services were set as manual on the server:

Alerter

Computer Browser

DHCP Client

Distributed File System

Distributed Link Tracking Client

DNS Client

IPSEC Policy Agent

License Logging Service

Messager

Print Spooler

Remote Registry Service

Removable Storage

RUN as Service

System Event Notification

Task Scheduler

## Microsoft SQL Server 2000 Startup Parameters

Microsoft SQL Server 2000 Startup Parameters

c:\Program Files\Microsoft SQL Server\MSSQL\Binn\sqlservr.exe -c -x -t3502 -g100

#### Where:

- -c Start SQL Server independent of the Service Control Manager
- -x Disable the keeping of CPU time and cache hit ratio statistics
- -t3502 Writes a message to the SQL Server Errorlog showing the beginning and ending time of each checkpoint
- -g100 Specifies the amount of memory that is set aside for allocations not from the buffer pool

### Microsoft SQL Server 2000 Configuration Parameters

1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11>

-- File: VERSION.SQL

-- Microsoft TPC-C Benchmark Kit Ver. 4.22

-- Copyright Microsoft, 2001

-- Purpose: Returns SQL Server version string

```
print " "
select convert(char(30), getdate(),9)
print " "
```

Nov 1 2001 5:25:49:140PM (1 row affected) 1> 2> 3> select @@version

Microsoft SQL Server 2000 - 8.00.384 (Intel X86) May 23 2001 00:02:52

> yright (c) 1988-2000 Microsoft Corporation Standard Edition on Windows NT 5.0 (Build 2195: Service Pack 2)

(1 row affected) 1> 2> 1> 2> 3> 4> 5> 6> 7> 8> 9> 10> -- File: CONFIG.SQL

Microsoft TPC-C Benchmark Kit Ver. 4.22

Copyright Microsoft, 2001

-- Purpose: Collects SQL Server configuration parameters

print " "
select convert(char(30), getdate(),9)
print " "

Nov 1 2001 5:25:49:967PM

(1 row affected)

1> 2> 3> DBCC execution completed. If DBCC printed error messages, contact your system administrator.

Configuration option 'show advanced options' changed from 1 to 1. Run the RECONFIGURE statement to install.

sp\_configure "show advanced",1
1> 2> reconfigure with override
1> 2> sp\_configure
name

name minimum maximum config value run value

default full-text language 0 2147483647 1033 1033

default language	0 9999 0 [Sy	stem Information]
0 fill factor (%)	0 100 0 [Fo	ollowing are sub-categories of this main category ]
0 index create memory (KB) 0 0	704 2147483647 [Sy	stem Summary]
lightweight pooling	0 1 1 Item	n Value Name Microsoft Windows 2000 Server
locks 0	5000 2147483647 0 Ver	rsion 5.0.2195 Service Pack 2 Build 2195  Manufacturer Microsoft Corporation
max degree of parallelism	0 32 1 Sys	stem Name TPCC-3WAY stem Manufacturer IBM
max server memory (MB) 2147483647 2147483647	4 2147483647 Sys	stem Model SERMOHAK stem Type X86-based PC
max text repl size (B) 65536 65536	0 2147483647 Pro	cessor x86 Family 6 Model 10 Stepping 0 GenuineIntel ~700 Mhz
max worker threads	32 32767 BIG	OS Version Ver 6.0 ndows Directory C:\WINNT
media retention	0 365 0 Sys	stem Directory C:\WINNT\System32 ot Device \Device\Harddisk0\Partition1
min memory per query (KB) 1024 1024	512 2147483647 Loc	cale United States er NameTPCC-3WAY\Administrator
min server memory (MB) 0 0		ne Zone Eastern Standard Time ral Physical Memory 2,096,644 KB
nested triggers	0 1 1 Ava	ailable Physical Memory 1,912,116 KB al Virtual Memory 6,132,500 KB
network packet size (B) 4096 4096	512 65536 Ava	ailable Virtual Memory 5,882,424 KB ge File Space 4,035,856 KB
open objects		e File C:\pagefile.sys
priority boost	0 1 1 [Ha	ardware Resources]
query governor cost limit 0 0	0 2147483647 [ Fo	ollowing are sub-categories of this main category ]
query wait (s)	-1 2147483647 -1 [Co	onflicts/Sharing]
recovery interval (min) 56 56		source Device Q 17 Adaptec AIC-7896/AIC-7897 PCI Ultra2 SCSI Controller
remote access	0 1 1 IRC	Q 17 Adaptec AIC-7896/AIC-7897 PCI Ultra2 SCSI Controller
remote login timeout (s) 20 20	0 2147483647 [DM	MA]
remote proc trans	0 1 0 Cha 2	annel Device Status Standard floppy disk controller OK
remote query timeout (s) 600 600	0 2147483647 4	Direct memory access controller OK
scan for startup procs	0 1 0 [Fo	rced Hardware]
set working set size 0		vice PNP Device ID Forced Hardware
show advanced options	0 1 1 [I/C	0]
two digit year cutoff 2049 2049	1753 9999 Add	dress Range Device Status
user connections 0		0000-0x03AF PCI bus OK 0000-0x03AF Direct memory access controller OK
user options 0		)3B0-0x03BB PCI bus OK )3B0-0x03BB S3 Inc. Trio3D OK
1>		03BC-0x03BF
		03C0-0x03DF S3 Inc. Trio3D OK 03E0-0x221F PCI bus OK
Microsoft Windows 2000 Se		2000-0x20FF Adaptec AIC-7896/AIC-7897 PCI Ultra2 SCSI ntroller OK
Information Report	0x2 Cor	2100-0x21FF Adaptec AIC-7896/AIC-7897 PCI Ultra2 SCSI ntroller OK
System Information report written at: 11/01/2001		2200-0x221F IBM 10/100 NetFinity Fault Tolerant Adapter

0x0A79-0x0A79	ISAPNP Read Data Port	OK	0xFEBFE000-0xFEBFEFFF	Adaptec AIC-7896/A	AIC-7897 P	CI Ultra2
0x0279-0x0279	ISAPNP Read Data Port	OK	SCSI Controller OK			
0x02F4-0x02F7	ISAPNP Read Data Port	OK	0xFEBFDC00-0xFEBFDC1F	IBM 10/100 NetFini	ty Fault To	lerant Adapter
0x002E-0x002F	Motherboard resources	OK	OK			~
0x0438-0x0439	Motherboard resources	OK	0xFEBFC000-0xFEBFCFFF	Standard OpenHCD	USB Host	Controller
0x0430-0x0437	Motherboard resources	OK	OK	DCI I OV		
0x0060-0x0060	Standard 101/102-Key or Micros	soft Natural PS/2	0xF5F00000-0xF5FFFFF	PCI bus OK PCI bus OK		
Keyboard OK	Standard 101/102 Vay or Migras	oft Notural DC/2	0xF7000000-0xF7FFFFFF 0xF5FFE000-0xF5FFFFFF	PCI bus OK IBM ServeRAID 4M	Av. Controll	or OV
0x0064-0x0064 Keyboard OK	Standard 101/102-Key or Micros	ion Natural PS/2	0xF5FFC000-0xF5FFDFFF	IBM ServeRAID 4N		
0x03F0-0x03F5	Standard floppy disk controller	OK	0x80000000-0xBAEFFFFF	PCI bus OK	ix Controlle	JOK
0x03F7-0x03F7	Standard floppy disk controller	OK	0xBAF00000-0xF5EFFFFF	PCI bus OK		
0x0378-0x037F	Printer Port (LPT1) OK	OIL	0xF6000000-0xF6FFFFF	PCI bus OK		
0x03F8-0x03FF	Communications Port (COM1)	OK	0xF6FFE000-0xF6FFFFF	IBM ServeRAID 4M	Ix Controlle	er OK
0x02F8-0x02FF	Communications Port (COM2)	OK	0xF6FFC000-0xF6FFDFFF	IBM ServeRAID 4M		
0x00E8-0x00E9	Not Available OK		0xF6FFA000-0xF6FFBFFF	IBM ServeRAID 4M		
0x0020-0x0021	Advanced programmable interrup	pt controller OK				
0x00A0-0x00A1	Advanced programmable interrup		[Components]			
0x0080-0x008F	Direct memory access controller	OK				
0x00C0-0x00DF	Direct memory access controller	OK	[ Following are sub-categories	of this main category ]		
0x0040-0x0043	System timer OK					
0x0070-0x0073	System CMOS/real time clock	OK	[Multimedia]			
0x0061-0x0061	System speaker OK					
0x00F0-0x00FF	Numeric data processor	OK	[ Following are sub-categories	of this main category ]		
0x0700-0x0700	Motherboard resources	OK				
0x0374-0x0375	Motherboard resources	OK	[Audio Codecs]			
0x0377-0x0377	Motherboard resources	OK	l		~	
0x0F50-0x0F58	Motherboard resources	OK	Codec Manufacturer	Description	Status	File
0x0900-0x090F	Not Available OK	C + II OV	Version Size Creation			OV
0x0840-0x084F	Standard Dual Channel PCI IDE	Controller OK	c:\winnt\system32\tssoft32.acr		0.27 KD	OK
0x01F0-0x01F7	Primary IDE Channel OK Primary IDE Channel OK		C:\WINNT\System32\TSSOF' 12/7/1999 7:00:00 AM	Γ32.ACM 1.01	9.27 KB (	(9,488 bytes)
0x03F6-0x03F6 0x0170-0x0177	Secondary IDE Channel	OK	c:\winnt\system32\imaadp32.a	am Miarasaft Carnarati	on.	
0x0376-0x0376	Secondary IDE Channel	OK		32\IMAADP32.ACM	5.00.2134	1 1
0x2220-0xFFFF	PCI bus OK	OK	16.27 KB (16,656 bytes)	12/7/1999 7:00:00 A		t. 1
0X2220-0X1111	1 CI bus OK		c:\winnt\system32\msadp32.ac			
[IRQs]				32\MSADP32.ACM	5.00.2134	1 1
[IIIQ5]			14.77 KB (15,120 bytes)	12/7/1999 7:00:00 A		
IRQ Number	Device		c:\winnt\system32\msg723.acr			
	t ACPI-Compliant System		OK C:\WINNT\System			106.77 KB
	AIC-7896/AIC-7897 PCI Ultra2 SC	CSI Controller		001 12:58:37 PM		
17 Adaptec	AIC-7896/AIC-7897 PCI Ultra2 SC	CSI Controller	c:\winnt\system32\iac25_32.ax	Intel Corporation	Indeo® a	udio software
	100 NetFinity Fault Tolerant Adapte		OK C:\WINNT\System	32\IAC25_32.AX	2.05.53	195.00 KB
1 Standard	101/102-Key or Microsoft Natural	PS/2 Keyboard	(199,680 bytes) 12/7/19	99 7:00:00 AM		
	npatible Mouse		c:\winnt\system32\msg711.acr			
	floppy disk controller		OK C:\WINNT\System		5.00.2134	1.1
	ications Port (COM1)		10.27 KB (10,512 bytes)			
	ications Port (COM2)		c:\winnt\system32\lhacm.acm			
5 Not Avai			OK C:\WINNT\System		4.4.3385	33.27 KB
	CMOS/real time clock			001 12:58:38 PM		
	data processor		c:\winnt\system32\msgsm32.a			1 1
,	DE Channel		OK C:\WINNT\System 22.27 KB (22,800 bytes)	32\MSGSM32.ACM	5.00.2134	ŧ.1
	OpenHCD USB Host Controller veRAID 4Mx Controller		22.27 KB (22,800 bytes)	12/7/1999 7:00:00 A	.1 <b>V1</b>	
	veRAID 4Mx Controller		[Video Codecs]			
	veRAID 4Mx Controller		[video codees]			
	veRAID 4Mx Controller		Codec Manufacturer	Description	Status	File
	veRAID 4Mx Controller		Version Size Creation		Status	THE
2. 15501	vere in a street control of		c:\winnt\system32\ir50 32.dll	Intel Corporation	Indeo® v	ideo 5.10
[Memory]			OK C:\WINNT\System		R.5.10.15	
. ,,			737.50 KB (755,200 bytes)	12/7/1999 7:00:00 A		
Range Device	Status		c:\winnt\system32\msh263.drv			
0xA0000-0xBFFFF			OK C:\WINNT\System			252.27 KB
0xA0000-0xBFFFF	S3 Inc. Trio3D OK			001 12:58:00 PM		
0xF8000000-0xFFF	FFFFF PCI bus OK		c:\winnt\system32\msrle32.dll	Microsoft Corporation	on	
0xF8000000-0xFFF		OK		32\MSRLE32.DLL	5.00.2134	1.1
0xFEBFF000-0xFE	1	IC-7897 PCI Ultra2	10.77 KB (11,024 bytes)	12/7/1999 7:00:00 A	M	
SCSI Controller	OK					
			I .			

Enhanced (101- or 102-key) c:\winnt\system32\ir32 32.dll Intel(R) Corporation Name C:\WINNT\System32\IR32 32.DLL Not Available 194.50 KB Lavout 00000409 ACPI\PNP0303\4&23FD4C84&0 (199,168 bytes) 12/7/1999 7:00:00 AM PNP Device ID c:\winnt\system32\iccvid.dll Radius Inc. OK NumberOfFunctionKeys 12 C:\WINNT\System32\ICCVID.DLL 1.10.0.6 108.00 KB (110,592 12/7/1999 7:00:00 AM c:\winnt\system32\msvidc32.dll Microsoft Corporation [Pointing Device] C:\WINNT\System32\MSVIDC32.DLL 5.00.2134.1 27.27 KB (27,920 bytes) 12/7/1999 7:00:00 AM Item Value c:\winnt\system32\msh261.drv Microsoft Corporation Hardware Type PS/2 Compatible Mouse C:\WINNT\System32\MSH261.DRV 4.4.3385 163.77 KB Number of Buttons 10/22/2001 12:58:37 PM Status (167,696 bytes) OK ACPI\PNP0F13\4&23FD4C84&0 PNP Device ID [CD-ROM] Power Management Supported False Double Click Threshold Value Handedness Item Right Handed Operation Drive  $\mathbf{D}$ CD-ROM Drive Description [Modem] Media Loaded False Media Type CD-ROM LITEON CD-ROM LTN403 Item Value Name (Standard CD-ROM drives) No modems Manufacturer Status OK Transfer Rate Not Available [Network] SCSI Target ID 0 PNP Device ID [ Following are sub-categories of this main category ] IDE\CDROMLITEON CD-ROM LTN403 DU26 \5&326853DD&0&0.0.0 [Adapter] Item Value [Sound Device] Name [00000000] IBM 10/100 NetFinity Fault Tolerant Adapter Adapter Type Ethernet 802.3 Item Value Product Name IBM 10/100 NetFinity Fault Tolerant Adapter No sound devices Installed True PNP Device ID PCI\VEN 1022&DEV 2000&SUBSYS 20001014&REV 44\3&267A616A& [Display] 0&28 Value Last Reset 11/1/2001 6:14:38 AM Item S3 Inc. Trio3D Index Name PNP Device ID Service Name **PCnet** PCI\VEN 5333&DEV 8904&SUBSYS 00DB1014&REV 01\3&267A616A IP Address 192.168.132.250 IP Subnet 255.255.255.0 &0&30 Adapter Type S3 Trio3D, S3 compatible Default IP Gateway Not Available Adapter Description S3 Inc. Trio3D **DHCP** Enabled False 4.00 MB (4,194,304 bytes) **DHCP Server** Not Available Adapter RAM DHCP Lease Expires Not Available Installed Drivers s3mt3d.sys Driver Version 5.01.526.0007 **DHCP** Lease Obtained Not Available INF File s3trio3d.inf (S3Inc section) MAC Address 00:06:29:55:67:FA **PCnet** Color Planes Service Name Color Table Entries 65536 IRO Number 0x2200-0x221F Resolution 800 x 600 x 60 hertz I/O Port Bits/Pixel 16 c:\winnt\system32\drivers\pcntpci5.sys (36928, 4.29.00) Driver Name [00000001] RAS Async Adapter [Infrared] Adapter Type Not Available RAS Async Adapter Product Name Value Installed True No infrared devices PNP Device ID Not Available Last Reset 11/1/2001 6:14:38 AM [Input] Index Service Name AsyncMac [ Following are sub-categories of this main category ] IP Address Not Available IP Subnet Not Available [Keyboard] Default IP Gateway Not Available DHCP Enabled False Item Value **DHCP Server** Not Available Standard 101/102-Key or Microsoft Natural PS/2 DHCP Lease Expires Not Available Description Keyboard **DHCP** Lease Obtained Not Available

IP Address Not Available MAC Address Not Available Service Name Not Available IP Subnet Not Available Default IP Gateway Not Available [00000002] WAN Miniport (L2TP) Name DHCP Enabled False Adapter Type Not Available DHCP Server Not Available Product Name WAN Miniport (L2TP) DHCP Lease Expires Not Available DHCP Lease Obtained Installed True Not Available PNP Device ID ROOT\MS L2TPMINIPORT\0000 MAC Address Not Available Last Reset 11/1/2001 6:14:38 AM Service Name NdisWan c:\winnt\system32\drivers\ndiswan.sys (90096, 5.00.2195.2779) Index Driver Service Name Rasl2tp IP Address Not Available IP Subnet Not Available [Protocol] Default IP Gateway Not Available **DHCP** Enabled False Item Value MSAFD Tcpip [TCP/IP] **DHCP Server** Not Available Name DHCP Lease Expires Not Available ConnectionlessService False Not Available DHCP Lease Obtained GuaranteesDelivery True MAC Address Not Available GuaranteesSequencing True Service Name Rasl2tp MaximumAddressSize 16 bytes c:\winnt\system32\drivers\rasl2tp.sys (50800, 5.00.2179.1) MaximumMessageSize Driver 0 bytes MessageOriented Name [00000003] WAN Miniport (PPTP) MinimumAddressSize16 bytes Adapter Type Wide Area Network (WAN) PseudoStreamOriented False Product Name WAN Miniport (PPTP) SupportsBroadcasting False Installed True SupportsConnectData False PNP Device ID ROOT\MS PPTPMINIPORT\0000 SupportsDisconnectData False Last Reset 11/1/2001 6:14:38 AM SupportsEncryption False Index SupportsExpeditedData True SupportsGracefulClosing Service Name PptpMiniport True IP Address Not Available SupportsGuaranteedBandwidth False IP Subnet Not Available SupportsMulticasting False Default IP Gateway Not Available **DHCP** Enabled False MSAFD Tcpip [UDP/IP] DHCP Server Not Available ConnectionlessService True DHCP Lease Expires Not Available GuaranteesDelivery False DHCP Lease Obtained Not Available GuaranteesSequencing False MAC Address 50:50:54:50:30:30 MaximumAddressSize 16 bytes PptpMiniport MaximumMessageSize Service Name 65467 bytes Driver c:\winnt\system32\drivers\raspptp.sys (47856, 5.00.2160.1) MessageOriented True MinimumAddressSize16 bytes [00000004] Direct Parallel **PseudoStreamOriented** False Name Adapter Type Not Available SupportsBroadcasting True Direct Parallel SupportsConnectData False Product Name SupportsDisconnectData Installed True False PNP Device ID ROOT\MS PTIMINIPORT\0000 SupportsEncryption False Last Reset 11/1/2001 6:14:38 AM SupportsExpeditedData False Index SupportsGracefulClosing False SupportsGuaranteedBandwidth False Service Name Raspti IP Address Not Available SupportsMulticasting True IP Subnet Not Available Default IP Gateway Not Available RSVP UDP Service Provider Name **DHCP** Enabled ConnectionlessService False True **DHCP Server** Not Available GuaranteesDelivery False DHCP Lease Expires Not Available GuaranteesSequencing False MaximumAddressSize DHCP Lease Obtained Not Available 16 bytes MAC Address Not Available MaximumMessageSize 65467 bytes Service Name Raspti MessageOriented True c:\winnt\system32\drivers\raspti.sys (16880, 5.00.2146.1) MinimumAddressSize16 bytes Driver PseudoStreamOriented False Name [00000005] WAN Miniport (IP) SupportsBroadcasting True Adapter Type Not Available SupportsConnectData False Product Name WAN Miniport (IP) SupportsDisconnectData False Installed True SupportsEncryption True PNP Device ID ROOT\MS NDISWANIP\0000 SupportsExpeditedData False Last Reset 11/1/2001 6:14:38 AM SupportsGracefulClosing False SupportsGuaranteedBandwidth False Index Service Name NdisWan SupportsMulticasting True

		lac: All C 201	
Name RSVP TCP Service F	travidar	MinimumAddressSize20 bytes PseudoStreamOriented	False
Connectionless Service	False	SupportsBroadcasting False	raise
GuaranteesDelivery True	1 disc	SupportsConnectData False	
GuaranteesSequencing	True	SupportsDisconnectData	False
MaximumAddressSize	16 bytes	SupportsEncryption False	
MaximumMessageSize	0 bytes	SupportsExpeditedData	False
MessageOriented False		SupportsGracefulClosing	False
MinimumAddressSize16 bytes		SupportsGuaranteedBandwidth	False
PseudoStreamOriented	False	SupportsMulticasting False	
SupportsBroadcasting False		NG AFD MADIOG	
SupportsConnectData False	E-1	Name MSAFD NetBIOS	DD20 A0ED 4E/E D7DE 00E420205//011
SupportsDisconnectData SupportsEncryption True	False	DATAGRAM 1	DB28-A9EB-4F6E-B7BE-88E428395668}]
SupportsExpeditedData	True	ConnectionlessService	True
SupportsGracefulClosing	True	GuaranteesDelivery False	Truc
SupportsGuaranteedBandwidth	False	GuaranteesSequencing	False
SupportsMulticasting False		MaximumAddressSize	20 bytes
		MaximumMessageSize	64000 bytes
Name MSAFD NetBIOS		MessageOriented True	,
[\Device\NetBT_Tcpip_{D92A0	CB78-93D7-4032-A32B-E364CC563DC7}]	MinimumAddressSize20 bytes	
SEQPACKET 0		PseudoStreamOriented	False
ConnectionlessService	False	SupportsBroadcasting True	
GuaranteesDelivery True		SupportsConnectData False	
GuaranteesSequencing	True	SupportsDisconnectData	False
MaximumAddressSize	20 bytes	SupportsEncryption False	F 1
MaximumMessageSize MessageOriented True	64000 bytes	SupportsExpeditedData	False False
MessageOriented True MinimumAddressSize20 bytes		SupportsGracefulClosing SupportsGuaranteedBandwidth	False
PseudoStreamOriented	False	SupportsMulticasting False	1 disc
SupportsBroadcasting False	Taise	Supports via treasening Turse	
SupportsConnectData False		Name MSAFD NetBIOS	
SupportsDisconnectData	False		30F4-1B2D-4248-A235-E22D3F13D2B7}]
SupportsEncryption False		SEQPACKET 2	,,
		~~ (	
SupportsExpeditedData	False	ConnectionlessService	False
SupportsExpeditedData SupportsGracefulClosing	False	ConnectionlessService GuaranteesDelivery True	
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth		ConnectionlessService GuaranteesDelivery True GuaranteesSequencing	True
SupportsExpeditedData SupportsGracefulClosing	False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize	True 20 bytes
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False	False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize	True
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS	False False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True	True 20 bytes
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92A0}]	False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes	True 20 bytes 64000 bytes
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AGDATAGRAM 0}]	False False CB78-93D7-4032-A32B-E364CC563DC7}]	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented	True 20 bytes
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92A0} DATAGRAM 0 ConnectionlessService	False False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False	True 20 bytes 64000 bytes
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False	False False CB78-93D7-4032-A32B-E364CC563DC7}]	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False	True 20 bytes 64000 bytes
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92A0} DATAGRAM 0 ConnectionlessService	False False False  CB78-93D7-4032-A32B-E364CC563DC7}]  True	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False	True 20 bytes 64000 bytes False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData	True 20 bytes 64000 bytes False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsCracefulClosing	True 20 bytes 64000 bytes False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AGDATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth	True 20 bytes 64000 bytes  False  False  False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AGDATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsCracefulClosing	True 20 bytes 64000 bytes  False  False False False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AGDATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsCacefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False	True 20 bytes 64000 bytes  False  False False False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsEncryption False SupportsCracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS	True 20 bytes 64000 bytes  False  False False False False False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92ACDATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsEncryption False SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\\netBT_Tcpip_{4FBAB}]	True 20 bytes 64000 bytes  False  False False False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsConnectData SupportsEncryption False SupportsEncryption False SupportsGracefulClosing SupportsGracefulClosing SupportsMulticasting False Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4FBAB}] DATAGRAM 2	True 20 bytes 64000 bytes  False  False False False False False False False False False False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsExpeditedData	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False False False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsConnectData SupportsEncryption False SupportsEncryption False SupportsGracefulClosing SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4FBABDATAGRAM 2} ConnectionlessService	True 20 bytes 64000 bytes  False  False False False False False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False False False False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\\nethotsless \text{VDevice}\\nethotsless \text{VEBT}_Tcpip_{4FBAFDATAGRAM 2} ConnectionlessService GuaranteesDelivery False	True 20 bytes 64000 bytes  False  False False False False False False True  30F4-1B2D-4248-A235-E22D3F13D2B7}]  True
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsExpeditedData	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False False False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsConnectData SupportsEncryption False SupportsEncryption False SupportsGracefulClosing SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4FBABDATAGRAM 2} ConnectionlessService	True 20 bytes 64000 bytes  False  False False False False False False False False False False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False False False False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsEncryption False SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	True 20 bytes 64000 bytes  False  False  False False False False True  30F4-1B2D-4248-A235-E22D3F13D2B7}]  True False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS	False False  CB78-93D7-4032-A32B-E364CC563DC7}]  True  False 20 bytes 64000 bytes  False False False False False False False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsDisconnectData SupportsEncryption False SupportsEncryption False SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{4FBAFDATAGRAM 2} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True	True 20 bytes 64000 bytes  False  False False False False False False Talse  True  False False 20 bytes
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AODATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False False False False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4FBAFDATAGRAM 2} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MessageOriented True MinimumAddressSize20 bytes	True 20 bytes 64000 bytes  False  False False False False False False Talse  True  False False 20 bytes
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AG} DATAGRAM 0 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsBroadcasting True SupportsConnectData False SupportsExpeditedData SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{C6AA} SEQPACKET 1	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGuaranteedBandwidth SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4FBAF} DATAGRAM 2 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented	True 20 bytes 64000 bytes  False  False False False False False False Talse  True  False False 20 bytes
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AG} DATAGRAM 0 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{C6AA} SEQPACKET 1 ConnectionlessService	False False  CB78-93D7-4032-A32B-E364CC563DC7}]  True  False 20 bytes 64000 bytes  False False False False False False False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4FBAF} DATAGRAM 2 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True	True 20 bytes 64000 bytes  False  False  False False False False  False  False  For the state of
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AG} DATAGRAM 0 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsGracefulClosing SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsGuaranteedBandwidth SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{C6AA} SEQPACKET 1 ConnectionlessService GuaranteesDelivery True	False False  CB78-93D7-4032-A32B-E364CC563DC7}]  True  False 20 bytes 64000 bytes  False	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4FBAF} DATAGRAM 2 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsConnectData False	True 20 bytes 64000 bytes  False  False  False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AGDATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{C6AASEQPACKET 1} ConnectionlessService GuaranteesDelivery True GuaranteesSequencing	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False False False False False False True CB78-93D7-4032-A32B-E364CC563DC7}]  True False True True True True	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsDisconnectData False SupportsDisconnectData SupportsEncryption False SupportsEncryption False SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	True 20 bytes 64000 bytes  False  False  False False False False  False  False  For the state of
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AGDATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsDisconnectData False SupportsDisconnectData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{C6AA} SEQPACKET 1 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False False False False False False True 20 bytes	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsEncryption False SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4FBAF} DATAGRAM 2 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsConnectData False SupportsDisconnectData SupportsEncryption False	True 20 bytes 64000 bytes  False  False  False False False False  S0F4-1B2D-4248-A235-E22D3F13D2B7}]  True  False 20 bytes 64000 bytes  False
SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D92AGDATAGRAM 0} ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{C6AASEQPACKET 1} ConnectionlessService GuaranteesDelivery True GuaranteesSequencing	False False CB78-93D7-4032-A32B-E364CC563DC7}] True False 20 bytes 64000 bytes False False False False False False True CB78-93D7-4032-A32B-E364CC563DC7}]  True False True True True True	ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsDisconnectData False SupportsDisconnectData SupportsEncryption False SupportsEncryption False SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	True 20 bytes 64000 bytes  False  False  False

	GuaranteedBandwidth  Multicasting False	False	Status OK PNP Device ID ACPI\PN	P0501\2
Supportsiv	futicasting Paisc		Maximum Input Buffer Size	0
			Maximum Output Buffer Size	False
[WinSock	1		Settable Baud Rate True	
			Settable Data Bits True	
Item	Value		Settable Flow Control True	
File	c:\winnt\system32\win	nsock.dll	Settable Parity True	
Version	3.10		Settable Parity Check True	
Size	2.80 KB (2,864 bytes)	)	Settable Stop Bits True	
	• •		Settable RLSD True	
File	c:\winnt\system32\ws	ock32.dll	Supports RLSD True	
Version	5.00.2195.2871		Supports 16 Bit Mode False	
Size	21.27 KB (21,776 byt	res)	Supports Special Characters	False
			Baud Rate 9600	
			Bits/Byte 8	
[Ports]			Stop Bits 1	
			Parity None	
[ Followin	g are sub-categories of	this main category ]	Busy 0	
			Abort Read/Write on Error	0
[Serial]			Binary Mode Enabled -1	
			Continue XMit on XOff	0
Item	Value		CTS Outflow Control 0	
Name	COM1		Discard NULL Bytes 0	
Status	OK		DSR Outflow Control 0	
PNP Devi	ce ID ACPI\PNP	20501\1	DSR Sensitivity 0	
Maximum	Input Buffer Size	0	DTR Flow Control Type	Enable
Maximum	Output Buffer Size	False	EOF Character 0	
Settable B	aud Rate True		Error Replace Character	0
Settable D	ata Bits True		Error Replacement Enabled	0
Settable F	low Control True		Event Character 0	
Settable Pa	arity True		Parity Check Enabled 0	
Settable P	arity Check True		RTS Flow Control Type	Enable
Settable S	top Bits True		XOff Character 19	
Settable R	LSD True		XOffXMit Threshold 512	
Supports I	RLSD True		XOn Character 17	
Supports 1	6 Bit Mode False		XOnXMit Threshold 2048	
	Special Characters	False	XOnXOff InFlow Control	0
Baud Rate			XOnXOff OutFlow Control	0
Bits/Byte			IRQ Number 3	
Stop Bits	1		I/O Port 0x02F8-0x02FF	
Parity	None		Driver c:\winnt\system32\dr	rivers\serial.sys (62416, 5.00.2195.2780)
Busy	0			
	d/Write on Error	0		
	ode Enabled -1		[Parallel]	
	XMit on XOff	0		
	low Control 0		Item Value	
Discard N	ULL Bytes 0		Name LPT1	
DSR Outf	low Control 0		PNP Device ID ACPI\PN	P0400\1
DSR Sens				
	Control Type	Enable		
EOF Char			[Storage]	
	lace Character	0		
	lacement Enabled	0	[ Following are sub-categories of	of this main category ]
Event Cha				
	eck Enabled 0		[Drives]	
	Control Type	Enable		
XOff Chai			Item Value	
	t Threshold 512		Drive A:	
XOn Char			Description 3 1/2 Inch	n Floppy Drive
	Threshold 2048			
	InFlow Control	0	Drive C:	
	OutFlow Control	0	Description Local Fix	ed Disk
IRQ Num			Compressed False	
I/O Port	0x03F8-0x03FF		File System NTFS	
Driver	c:\winnt\system32\dri	vers\serial.sys (62416, 5.00.2195.2780)	Size 8.46 GB (9,086,029,	•
			Free Space 4.39 GB (4,718,694,	400 bytes)
Name	COM2		Volume Name	

	er 3452DBBD	Drive Partitions	2
Partition Disk #0, P		Drive SCSIBus	0
Partition Size	8.46 GB (9,086,031,360 bytes)	Drive SCSILogicalU	
Starting Offset	32256 bytes	Drive SCSIPort	5
Drive Description	Disk drive	Drive SCSITargetId	
Drive Manufacturer	(Standard disk drives)	Drive SectorsPerTrac	
Drive Model	IBM-PSG ST39103LC !# SCSI Disk Device	Drive Size 127393136	<u> </u>
Drive BytesPerSector		Drive TotalCylinders	
Drive MediaLoaded		Drive TotalSectors	248814720
Drive MediaType Drive Partitions	Fixed hard disk media	Drive TotalTracks Drive TracksPerCylin	3949440 nder 255
Drive SCSIBus	0	Drive HacksperCylli	idei 233
Drive SCSILogicalUr		Drive H:	
Drive SCSIPort	3	Description 11.	Local Fixed Disk
Drive SCSITargetId		Compressed	Not Available
Drive SectorsPerTrac		File System	Not Available
Drive Size 909425664		Size Not Availa	
Drive TotalCylinders		Free Space Not Availa	
Drive TotalSectors	17762220	Volume Name	Not Available
Drive TotalTracks	281940	Volume Serial Numb	
Drive TracksPerCylin	nder 254	Partition Disk #3, P	artition #0
•		Partition Size	118.63 GB (127,376,686,080 bytes)
Drive F:		Starting Offset	8225280 bytes
Description	Local Fixed Disk	Drive Description	Disk drive
Compressed	Not Available	Drive Manufacturer	(Standard disk drives)
File System	Not Available	Drive Model	IBM ServeRAID SCSI Disk Device
Size Not Availa	ıble	Drive BytesPerSector	
Free Space Not Availa	ıble	Drive MediaLoaded	
Volume Name	Not Available	Drive MediaType	Fixed hard disk media
Volume Serial Number		Drive Partitions	1
Partition Disk #1, P		Drive SCSIBus	0
Partition Size	118.63 GB (127,376,686,080 bytes)	Drive SCSILogicalU	
Starting Offset	8225280 bytes	Drive SCSIPort	6
Drive Description	Disk drive	Drive SCSITargetId	
	(Standard disk drives)	Drive SectorsPerTrac	
Drive Model	IBM ServeRAID SCSI Disk Device	Drive Size 127393136	
Drive BytesPerSector Drive MediaLoaded		Drive TotalCylinders Drive TotalSectors	248814720
Drive MediaType	Fixed hard disk media	Drive TotalTracks	3949440
Drive Partitions	2	Drive TracksPerCylin	
Drive SCSIBus	0	Dilve Hacksi ercyin	233
Drive SCSILogicalUr	*	Drive I:	
Direct Debile Greater			
Drive SCSIPort			Local Fixed Disk
Drive SCSIPort Drive SCSITargetId	4	Description	Local Fixed Disk Not Available
Drive SCSIPort Drive SCSITargetId Drive SectorsPerTrac	4 0	Description Compressed	Local Fixed Disk Not Available Not Available
Drive SCSITargetId	4 0 k 63	Description	Not Available Not Available
Drive SCSITargetId Drive SectorsPerTrac	4 0 k 63 6640 bytes	Description Compressed File System	Not Available Not Available able
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130	4 0 k 63 6640 bytes 15488	Description Compressed File System Size Not Avails Free SpaceNot Avails	Not Available Not Available able
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393136 Drive TotalCylinders	4 0 k 63 6640 bytes 15488	Description Compressed File System Size Not Avails Free SpaceNot Avails	Not Available Not Available able able Not Available
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393136 Drive TotalCylinders Drive TotalSectors	4 0 k 63 6640 bytes 15488 248814720 3949440	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P	Not Available Not Available able able Not Available er Not Available eartition #0
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin	4 0 k 63 6640 bytes 15488 248814720 3949440	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size	Not Available Not Available able able Not Available er Not Available
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin Drive G:	4 0 k 63 6640 bytes 15488 248814720 3949440 der 255	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset	Not Available Not Available able able Not Available er Not Available errition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin Drive G: Description	4 0 k 63 6640 bytes 15488 248814720 3949440 der 255	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description	Not Available Not Available able able Not Available er Not Available er Not Available artition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin Drive G: Description Compressed	4 0 k 63 6640 bytes 15488 248814720 3949440 ider 255 Local Fixed Disk Not Available	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer	Not Available Not Available able able Not Available er Not Available er Not Available artition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives)
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin Drive G: Description Compressed File System	4 0 k 63 6640 bytes 15488 248814720 3949440 ider 255 Local Fixed Disk Not Available Not Available	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model	Not Available Not Available able able Not Available er Not Available er Not Available 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin Drive G: Description Compressed File System Size Not Availa	4 0 k 63 6640 bytes 15488 248814720 3949440 ider 255 Local Fixed Disk Not Available Not Available able	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector	Not Available Not Available able able Not Available er Not Available er Not Available artition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin Drive G: Description Compressed File System Size Not Availa Free Space Not Availa	4 0 k 63 6640 bytes 15488 248814720 3949440 ider 255 Local Fixed Disk Not Available Not Available able	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector Drive MediaLoaded	Not Available Not Available able able Not Available er Not Available er Not Available artition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin Drive G: Description Compressed File System Size Not Availa Free Space Not Availa Volume Name	4 0 k 63 6640 bytes 15488 248814720 3949440 ider 255  Local Fixed Disk Not Available Not Available able able Not Available	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector Drive MediaLoaded Drive MediaType	Not Available Not Available able able Not Available er Not Available er Not Available artition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True Fixed hard disk media
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin Drive G: Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Number	4 0 k 63 6640 bytes 15488 248814720 3949440 ider 255  Local Fixed Disk Not Available Not Available able able Not Available er Not Available er Not Available	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector Drive MediaLoaded Drive MediaType Drive Partitions	Not Available Not Available able able Not Available er Not Available er Not Available tartition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True Fixed hard disk media 1
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin Drive G: Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numbe Partition Disk #2, P	4 0 k 63 6640 bytes 15488 248814720 3949440 ider 255  Local Fixed Disk Not Available Not Available able able Not Available er Not Available er Not Available artition #0	Description Compressed File System Size Not Availa Free SpaceNot Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector Drive MediaLoaded Drive MediaType Drive Partitions Drive SCSIBus	Not Available Not Available able able Not Available er Not Available er Not Available artition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True Fixed hard disk media 1 0
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393136 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TotalTracks Drive G: Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numbo Partition Disk #2, P Partition Size	4 0 k 63 6640 bytes 15488 248814720 3949440 ider 255  Local Fixed Disk Not Available Not Available able Not Available able Not Available er Not Available artition #0 118.63 GB (127,376,686,080 bytes)	Description Compressed File System Size Not Availa Free SpaceNot Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector Drive MediaLoaded Drive MediaType Drive Partitions Drive SCSIBus Drive SCSILogicalUn	Not Available Not Available able able Not Available er Not Available er Not Available artition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True Fixed hard disk media 1 0 nit 0
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393136 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TotalTracks Drive G: Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numbo Partition Disk #2, P Partition Size Starting Offset	4 0 k 63 6640 bytes 15488 248814720 3949440 ider 255  Local Fixed Disk Not Available Not Available able able able 18.63 GB (127,376,686,080 bytes) 8225280 bytes	Description Compressed File System Size Not Availa Free SpaceNot Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Model Drive MediaLoaded Drive MediaLoaded Drive MediaType Drive Partitions Drive SCSIBus Drive SCSILogicalUn Drive SCSIPort	Not Available Not Available able able Not Available er Not Available er Not Available rartition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True Fixed hard disk media 1 0 nit 0 7
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393136 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TotalTracks Drive G: Description Compressed File System Size Not Availa Volume Name Volume Serial Numb Partition Disk #2, P Partition Size Starting Offset Drive Description	4 0 k 63 6640 bytes 15488 248814720 3949440 ider 255  Local Fixed Disk Not Available Not Available able able able 18.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive	Description Compressed File System Size Not Availa Free SpaceNot Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Model Drive BytesPerSector Drive MediaLoaded Drive MediaLoaded Drive MediaType Drive Partitions Drive SCSIBus Drive SCSILogicalUn Drive SCSIPort Drive SCSITargetId	Not Available Not Available able able Not Available er Not Available er Not Available rartition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True Fixed hard disk media 1 0 nit 0 7 0
Drive SCSITargetId Drive SectorsPerTraci Drive Size 127393136 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TotalTracks Drive TracksPerCylin  Drive G: Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numbo Partition Disk #2, P Partition Size Starting Offset Drive Description Drive Manufacturer	4 0 k 63 6640 bytes 15488 248814720 3949440 dder 255  Local Fixed Disk Not Available Not Available able Not Available er Not Available artition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives)	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector Drive MediaLoaded Drive MediaType Drive Partitions Drive SCSIBus Drive SCSILogicalUt Drive SCSIPort Drive SCSITargetId Drive SectorsPerTrace	Not Available Not Available able able Not Available er Not Available er Not Available lartition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True Fixed hard disk media 1 0 nit 0 7 0 k 63
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin  Drive G: Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Name Volume Serial Numbo Partition Disk #2, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model	4 0 k 63 6640 bytes 15488 248814720 3949440 dder 255  Local Fixed Disk Not Available Not Available able able able Not Available er Not Available artition #0 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector Drive MediaLoaded Drive MediaType Drive Partitions Drive SCSIBus Drive SCSIBus Drive SCSILogicalUt Drive SCSIPort Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393136	Not Available Not Available able able Not Available er Not Available er Not Available 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True Fixed hard disk media 1 0 nit 0 7 0 k 63 6640 bytes
Drive SCSITargetId Drive SectorsPerTraci Drive Size 127393136 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TotalTracks Drive TracksPerCylin  Drive G: Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numbo Partition Disk #2, P Partition Size Starting Offset Drive Description Drive Manufacturer	4 0 k 63 6640 bytes 15488 248814720 3949440 dder 255  Local Fixed Disk Not Available Not Available able able able 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector Drive MediaLoaded Drive MediaType Drive Partitions Drive SCSIBus Drive SCSILogicalUt Drive SCSIPort Drive SCSITargetId Drive SectorsPerTrace	Not Available Not Available able able Not Available er Not Available er Not Available 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True Fixed hard disk media 1 0 nit 0 7 0 k 63 6640 bytes
Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders Drive TotalSectors Drive TotalTracks Drive TracksPerCylin Drive G: Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Name Volume Serial Numbo Partition Disk #2, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector	4 0 k 63 6640 bytes 15488 248814720 3949440 dder 255  Local Fixed Disk Not Available Not Available able able able 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device	Description Compressed File System Size Not Availa Free Space Not Availa Volume Name Volume Serial Numb Partition Disk #4, P Partition Size Starting Offset Drive Description Drive Manufacturer Drive Model Drive BytesPerSector Drive MediaLoaded Drive MediaType Drive Partitions Drive SCSIBus Drive SCSIBus Drive SCSILogicalUn Drive SCSIPort Drive SCSITargetId Drive SectorsPerTrac Drive Size 127393130 Drive TotalCylinders	Not Available Not Available able able Not Available er Not Available er Not Available 118.63 GB (127,376,686,080 bytes) 8225280 bytes Disk drive (Standard disk drives) IBM ServeRAID SCSI Disk Device 512 True Fixed hard disk media 1 0 nit 0 7 0 k 63 6640 bytes 15488

Drive TracksPerCylin	nder 255	Partition Disk #1, Partition #0
		Partition Size 118.63 GB (127,376,686,080 bytes)
Drive J:		Starting Offset 8225280 bytes
Description	Local Fixed Disk	Drive Description Disk drive
Compressed	Not Available	Drive Manufacturer (Standard disk drives)
File System	Not Available	Drive Model IBM ServeRAID SCSI Disk Device
Size Not Availa		Drive BytesPerSector 512
Free Space Not Availa		Drive MediaLoaded True
Volume Name	Not Available	Drive MediaType Fixed hard disk media Drive Partitions 2
Volume Serial Number Partition Disk #5, P		Drive Partitions 2 Drive SCSIBus 0
Partition Size	203.39 GB (218,389,409,280 bytes)	Drive SCSILogicalUnit 0
Starting Offset	8225280 bytes	Drive SCSIPort 4
Drive Description	Disk drive	Drive SCSITargetId 0
•		Drive SectorsPerTrack 63
Drive Model	IBM ServeRAID SCSI Disk Device	Drive Size 127393136640 bytes
Drive BytesPerSector		Drive TotalCylinders 15488
Drive MediaLoaded		Drive TotalSectors 248814720
Drive MediaType	Fixed hard disk media	Drive TotalTracks 3949440
Drive Partitions	1	Drive TracksPerCylinder 255
Drive SCSIBus	0	•
Drive SCSILogicalUr	nit 0	Drive Z:
Drive SCSIPort	8	Description Local Fixed Disk
Drive SCSITargetId	0	Compressed False
Drive SectorsPerTrac		File System NTFS
Drive Size 21839763	,	Size 68.36 GB (73,402,363,904 bytes)
Drive TotalCylinders		Free Space 22.34 GB (23,987,998,720 bytes)
Drive TotalSectors	426557880	Volume Name Backup_12
Drive TotalTracks	6770760	Volume Serial Number 88BFAEF4
Drive TracksPerCylin	nder 255	Partition Disk #2, Partition #0
D . W		Partition Size 118.63 GB (127,376,686,080 bytes)
Drive K:	Local Fixed Disk	Starting Offset 8225280 bytes
Description	Local Fixed Disk Not Available	Drive Description Disk drive Drive Manufacturer (Standard disk drives)
Compressed File System	Not Available	Drive Manufacturer (Standard disk drives) Drive Model IBM ServeRAID SCSI Disk Device
Size Not Availa		Drive BytesPerSector 512
Free Space Not Availa		Drive MediaLoaded True
Volume Name	Not Available	Drive MediaType Fixed hard disk media
Volume Serial Number		Drive Partitions 2
Partition Disk #6, P		Drive SCSIBus 0
Partition Size	68.35 GB (73,394,173,440 bytes)	Drive SCSILogicalUnit 0
Starting Offset	8225280 bytes	Drive SCSIPort 5
Drive Description	Disk drive	Drive SCSITargetId 0
Drive Manufacturer	(Standard disk drives)	Drive SectorsPerTrack 63
Drive Model	IBM ServeRAID SCSI Disk Device	Drive Size 127393136640 bytes
Drive BytesPerSector	512	Drive TotalCylinders 15488
Drive MediaLoaded		Drive TotalSectors 248814720
Drive MediaType	Fixed hard disk media	Drive TotalTracks 3949440
Drive Partitions	1	Drive TracksPerCylinder 255
Drive SCSIBus	0	
Drive SCSILogicalUr		Drive E:
Drive SCSIPort	8	Description Network Connection
Drive SCSITargetId		Provider Name \\192.168.132.253\e\$
Drive SectorsPerTrac		
Drive Size 73402398		[GCGI]
Drive TotalCylinders		[SCSI]
Drive TotalSectors Drive TotalTracks	143364060 2275620	Item Value
Drive TracksPerCylin		Item Value Name Adaptec AIC-7896/AIC-7897 PCI Ultra2 SCSI Controller
Dilve Hacksi cicyiii	idei 255	Caption Adaptec AIC-7896/AIC-7897 PCI Ultra2 SCSI Controller
Drive Y:		Driver aic78u2
Description	Local Fixed Disk	Status OK
Compressed	False	PNP Device ID
File System	NTFS	PCI\VEN_9005&DEV_005F&SUBSYS_080F9005&REV_00\3&267A616A&
	(73,402,363,904 bytes)	0&08
	(23,987,933,184 bytes)	Device ID
Volume Name	Backup_11	PCI\VEN_9005&DEV_005F&SUBSYS_080F9005&REV_00\3&267A616A&
Volume Serial Number		0&08

Device Map Not Available Max Number Controlled Not Available Index Not Available IRO Number 22 Max Number Controlled Not Available Driver c:\winnt\system32\drivers\nfrd960.sys (70815, 4.80.24) IRQ Number 17 I/O Port 0x2000-0x20FF IBM ServeRAID 4Mx Controller Name c:\winnt\system32\drivers\aic78u2.sys (65168, v3.00a) IBM ServeRAID 4Mx Controller Driver Caption Driver nfrd960 Adaptec AIC-7896/AIC-7897 PCI Ultra2 SCSI Controller Name Status Caption Adaptec AIC-7896/AIC-7897 PCI Ultra2 SCSI Controller PNP Device ID PCI\VEN 1014&DEV 01BD&SUBSYS 02081014&REV 00\3&1070020&0 Driver aic78u2 Status OK &20 PNP Device ID Device ID PCI\VEN 1014&DEV 01BD&SUBSYS 02081014&REV 00\3&1070020&0 PCI\VEN 9005&DEV 005F&SUBSYS 080F9005&REV 00\3&267A616A& &20 Device Map Not Available PCI\VEN 9005&DEV 005F&SUBSYS 080F9005&REV 00\3&267A616A& Index Not Available 0&09 Max Number Controlled Not Available Device Map Not Available IRQ Number 23 c:\winnt\system32\drivers\nfrd960.sys (70815, 4.80.24) Index Not Available Driver Max Number Controlled Not Available IRQ Number Name IBM ServeRAID 4Mx Controller 17 0x2100-0x21FF IBM ServeRAID 4Mx Controller I/O Port Caption Driver c:\winnt\system32\drivers\aic78u2.sys (65168, v3.00a) Driver nfrd960 Status IBM ServeRAID 4Mx Controller PNP Device ID Name IBM ServeRAID 4Mx Controller PCI\VEN 1014&DEV 01BD&SUBSYS 02081014&REV 00\3&1070020&0 Caption Driver nfrd960 &28 OK Status Device ID PNP Device ID PCI\VEN 1014&DEV 01BD&SUBSYS 02081014&REV 00\3&1070020&0 PCI\VEN 1014&DEV 01BD&SUBSYS 02081014&REV 00\3&13C0B0C5 &28 &0&08 Device Map Not Available Device ID Index Not Available PCI\VEN\_1014&DEV\_01BD&SUBSYS\_02081014&REV\_00\3&13C0B0C5 Max Number Controlled Not Available IRO Number 24 &0&08 Device Map Not Available c:\winnt\system32\drivers\nfrd960.sys (70815, 4.80.24) Driver Not Available Index Max Number Controlled Not Available IRQ Number [Printing] c:\winnt\system32\drivers\nfrd960.sys (70815, 4.80.24) Driver Port Name Server Name Name No printing information IBM ServeRAID 4Mx Controller Name IBM ServeRAID 4Mx Controller Caption nfrd960 [Problem Devices] Driver Status OK PNP Device ID PNP Device ID Device Error Code PCI\VEN\_1014&DEV\_01BD&SUBSYS\_02081014&REV\_00\3&13C0B0C5 Not Available ACPI\IBM37C0\4&23FD4C84&0 28 Not Available ACPI\IBM37D0\4&23FD4C84&0 28 Device ID PCI\VEN\_1014&DEV\_01BD&SUBSYS\_02081014&REV\_00\3&13C0B0C5 [USB] &0&10 Device Map Device PNP Device ID Not Available Standard OpenHCD USB Host Controller Index Not Available Max Number Controlled PCI\VEN\_1166&DEV\_0220&SUBSYS\_02201166&REV\_04\3&267A616A& Not Available IRO Number 21 0&7A c:\winnt\system32\drivers\nfrd960.sys (70815, 4.80.24) USB\ROOT HUB\4&372644EA&0 Driver USB Root Hub IBM ServeRAID 4Mx Controller Name [Software Environment] IBM ServeRAID 4Mx Controller Caption Driver nfrd960 [ Following are sub-categories of this main category ] Status OK PNP Device ID [Drivers] PCI\VEN 1014&DEV 01BD&SUBSYS 02081014&REV 00\3&1070020&0 Start Mode &18 Name Description File Started Type State Status Error Control Accept Pause Accept Stop PCI\VEN 1014&DEV 01BD&SUBSYS 02081014&REV 00\3&1070020&0 abiosdsk Abiosdsk Not Available Kernel Driver False Disabled Stopped OK False False Ignore abp480n5 abp480n5 Not Available Device Map Not Available Kernel Driver False

Index

Not Available

Normal

False

Disabled Stopped OK

Kernel Driver	oft ACPI Driver True Boot	c:\winnt\system32\d Running OK	rivers\acpi.sys Normal	cpqfws2e cpqfws2e Not Available Kernel Driver False Disabled Stopped OK Normal False False
False True acpiec ACPI	,		Kernel	dac960nt dac960nt Not Available Kernel Driver False Disabled Stopped OK Normal False False
Driver False False	Disabled Stopped	OK Normal	False	deckzpsx deckzpsx Not Available Kernel Driver False Disabled Stopped OK Normal False False
adpu160m adpu1 Disabled Stopp	60m Not Available ed OK Normal	Kernel Driver False False	False	dfsdriver DfsDriver c:\winnt\system32\drivers\dfs.sysFile System Driver True Boot Running OK Normal False True
afd AFD	Vetworking Support Envi Vdrivers\afd.sysKernel D		Auto	disk Disk Driver c:\winnt\system32\drivers\disk.sys Kernel Driver True Boot Running OK Normal
Running OK	Normal False	True		False True
aha154x Aha1: Disabled Stopp	4x Not Available ed OK Normal	Kernel Driver False False	False	diskperf Diskperf c:\winnt\system32\drivers\diskperf.sys Kernel Driver False Disabled Stopped OK Normal False
aic116x aic110 Disabled Stopp		Kernel Driver False False	False	False dmboot dmboot c:\winnt\system32\drivers\dmboot.sys Kernel
aic78u2 aic78u	2 c:\winnt\system32\d	rivers\aic78u2.sys	Kernel	Driver False Disabled Stopped OK Normal False
Driver True True	Boot Running	OK Normal	False	False dmio Logical Disk Manager Driver
aic78xx aic78x		Kernel Driver	False	c:\winnt\system32\drivers\dmio.sys Kernel Driver True
Disabled Stopp ami0nt ami0r		False False Kernel Driver	False	Boot Running OK Normal False True dmload dmload c:\winnt\system32\drivers\dmload.sys Kernel
Disabled Stopp amsint amsin		False False Kernel Driver	False	Driver True Boot Running OK Normal False True
Disabled Stopp		False False	raisc	e100b Intel(R) PRO Adapter Driver
asc asc Disabled Stopp	Not Available od OK Normal	Kernel Driver False False	False	c:\winnt\system32\\drivers\e100bnt5.sys Kernel Driver False  Manual Stopped OK Normal False False
asc3350p asc33	0p Not Available	Kernel Driver	False	efs EFS c:\winnt\system32\drivers\efs.sysFile System Driver
Disabled Stopp asc3550 asc35		False False Kernel Driver	False	True Disabled Running OK Normal False True fastfat Fastfat c:\winnt\system32\drivers\fastfat.sys File System
Disabled Stopp		False False		Driver True Disabled Running OK Normal False
	Asynchronous Media Dri Adrivers\asyncmac.sys	Kernel Driver	False	True fd16_700 Fd16_700 Not Available Kernel Driver False
1.1	ed OK Normal rd IDE/ESDI Hard Disk	False False		Disabled Stopped OK Normal False False fdc Floppy Disk Controller Driver c:\winnt\system32\drivers\fdc.sys
c:\winnt\system3	\drivers\atapi.sys	Kernel Driver	True	Kernel Driver True Manual Running OK Normal
Boot Runni atdisk Atdisl	ng OK Normal Not Available	False True Kernel Driver	False	False True fips Fips c:\winnt\system32\drivers\fips.sys Kernel
Disabled Stopp	ed OK Ignore	False False		Driver True Auto Running OK Normal False
1	ARP Client Protocol \drivers\atmarpc.sys	Kernel Driver	False	True fireport Not Available Kernel Driver False
Manual Stopp		False False	ash area	Disabled Stopped OK Normal False False
audstub Audio Kernel Driver	Stub Driver c:\winnt\ True Manual	system32\drivers\audst Running OK	Normal	flashpnt flashpnt Not Available Kernel Driver False Disabled Stopped OK Normal False False
False True beep Beep	c:\winnt\system32\d	rivers\heen sys	Kernel	flpydisk Floppy Disk Driver c:\winnt\system32\drivers\flpydisk.sys Kernel Driver True Manual Running OK Normal
Driver True	System Running	1 -	False	False True
True buslogic BusLo	gic Not Available	Kernel Driver	False	ftdisk Volume Manager Driver c:\winnt\system32\drivers\ftdisk.sys Kernel Driver True
Disabled Stopp	d OK Normal	False False		Boot Running OK Normal False True
cd20xrnt cd20x Disabled Stopp		Kernel Driver False False	False	gpc Generic Packet Classifier c:\winnt\system32\drivers\msgpc.sys Kernel Driver True
cdaudio Cdaud Driver False	io c:\winnt\system32\d System Stopped	,	Kernel False	Manual Running OK Normal False True i8042prt i8042 Keyboard and PS/2 Mouse Port Driver
False				c:\winnt\system32\drivers\i8042prt.sys Kernel Driver True
cdfs Cdfs Driver True	c:\winnt\system32\d Disabled Running	•	File System False	System Running OK Normal False True ini910u ini910u Not Available Kernel Driver False
True				Disabled Stopped OK Normal False False
cdrom CD-R Kernel Driver	OM Driver c:\winnt\ True System	system32\drivers\cdroi Running OK	n.sys Normal	intelide IntelIde Not Available Kernel Driver False Disabled Stopped OK Normal False False
False True changer Change	er Not Available	Kernel Driver	False	ipfilterdriver IP Traffic Filter Driver c:\winnt\system32\drivers\ipfiltdrv.sys Kernel Driver False
System Stopp	ed OK Ignore	False False		Manual Stopped OK Normal False False
cpqarray Cpqar Disabled Stopp		Kernel Driver False False	False	ipinip IP in IP Tunnel Driverc:\winnt\system32\drivers\ipinip.sys Kernel Driver False Manual Stopped OK Normal
cpqarry2 cpqar	y2 Not Available	Kernel Driver	False	False False
Disabled Stopp cpqfcalm cpqfc		False False Kernel Driver	False	ipnat IP Network Address Translator c:\winnt\system32\drivers\ipnat.sys Kernel Driver False Manual Stopped OK Normal
Disabled Stopp		False False		False False

ipsec	IPSEC dri	ver	c:\winnt\s	,	ivers\ipsec.s	,	netbt	NetBios o	ver Tcpip			ivers\netbt.s	sys
Kernel Dr		False	Manual	Stopped	OK	Normal	Kernel Dri		True	System	Running	OK	No
False	False				_		False	True					
ipsraidn	ipsraidn	Not Avail		Kernel Dr		False			-	ystem32\dri		-	Kei
Disabled	Stopped	OK	Normal	False	False		Driver	False	Manual	Stopped	OK	Normal	Fal
isapnp		EISA Bus D					False						
c:\winnt\s	ystem32\dri	vers\isapnp	o.sys	Kernel Dr	iver	True	nfrd960	IBM Serve	RAID 4M	/4Mx/4L/4I	x Device I	Oriver	
Boot	Running	OK	Critical	False	True		c:\winnt\sy	ystem32\dri	vers\nfrd96	60.sys	Kernel Dr	iver	Tru
kbdclass	Keyboard	Class Drive	er				Boot	Running	OK	Normal	False	True	
c:\winnt\s	ystem32\dri	ivers\kbdcla	ass.sys	Kernel Dr	iver	True	nfrdperf	IBM Serve	RAID 4M	/4Mx/4L/4I	x Performa	ance Driver	
System	Running	OK	Normal	False	True		c:\winnt\sy	ystem32\dri	vers\nfrdpe	erf.sys	Kernel Dr	iver	Tru
ksecdd	KSecDD	c:\winnt\s	ystem32\dri	vers\ksecd	d.sys	Kernel	Boot	Running	OK	Normal	False	True	
Driver	True	Boot	Running	OK	Normal	False	npfs	Npfs	c:\winnt\s	ystem32\dri	vers\npfs.s	ys	File
True							Driver	True	System	Running	OK	Normal	Fal
lbrtfdc	lbrtfdc	Not Avail	able	Kernel Dr	iver	False	True		•				
System	Stopped	OK	Ignore	False	False		ntfs	Ntfs	c:\winnt\s	ystem32\dri	vers\ntfs.sv	/S	File
lp6nds35	lp6nds35	Not Availa	_	Kernel Dr	iver	False	Driver	True		Running		Normal	Fal
Disabled	Stopped	OK	Normal	False	False		True			Ü			
mnmdd	mnmdd	c:\winnt\s	ystem32\dri	vers\mnmd	ld.svs	Kernel	null	Null	c:\winnt\s	ystem32\dri	vers\null.s	/S	Kei
Driver	True	System	Running		Ignore	False	Driver	True	System	•	OK	Normal	Fal
True		)	8		8		True		3	8			
modem	Modem	c:\winnt\s	ystem32\dri	vers\modei	m svs	Kernel		IPX Traffi	c Filter Dri	ver			
Driver	False	Manual	Stopped		Ignore	False		ystem32\dri			Kernel Dr	iver	Fal
False	1 dibe	Manage	Бторрец	OIL	Ignore	ruise	Manual	Stopped		Normal	False	False	ı uı
	Mouse Cl	es Driver	c:\winnt\s	vstem32\dri	ivers\moucl	acc cvc		IPX Traffi			1 disc	1 4150	
Kernel Dr		True	System	Running		Normal		ystem32\dri			Kernel Dr	iver	Fal
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		r.c.\winnt\e	ystem32\dri	vers\mount	tmar eve	Kernel	openhci	1.1		Host Contr			
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mrxsmb			ystem32\dri		-	File System	False	True	et deixon	a.l.v.inntla	ratam 20\ dm		et are
Driver	True	System	Running	OK	Normal	False	parport	Parallel po				ivers\parpoi	
True	M-6-		4 20\ 4	·\		E:1- C	Kernel Dri		True	System	Running	UK	Ign
msfs	Msfs		ystem32\dri		-	File System	False	True	,,	. 20\1:	١.,		17
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mskssrv		_	Service Pro	-		<b>.</b>	True	D ***		2011	, ,		**
	ystem32\dri		-	Kernel Dr		False	parvdm	ParVdm	-	ystem32\dri		-	Ke
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			Clock Prox			<b>.</b>	True	DOLD D			2011		**
	ystem32\dri		-	Kernel Dr		False	pci	PCI Bus D		-		ivers\pci.sy	
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	ystem32\dri		•	Kernel Dr		False	pcidump		Not Availa		Kernel Dr		Fal
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mup	Mup	c:\winnt\s	ystem32\dri		ys	File System	pciide	PCIIde	c:\winnt\s	ystem32\dri		.sys	Ke
Driver	True	Boot	Running	OK	Normal	False	Driver	True	Boot	Running	OK	Normal	Fal
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ndis		tem Driver	c:\winnt\s	ystem32\dri	ivers\ndis.s		False						
Kernel Dr	river	True	Boot	Running	OK	Normal	penet	PCNET A	dapter Driv	er			
False	True						c:\winnt\sy	ystem32\dri	vers\pcntpc	ci5.sys	Kernel Dr	iver	Tru
ndistapi	Remote A	ccess NDIS	S TAPI Driv	er			Manual	Running	OK	Normal	False	True	
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	NDIS Pro			ystem32\dri	ivers\ndpro	xy.sys	Manual	Stopped	OK	Ignore	False	False	
ndproxy		True	Manual	Running	-	Normal		PDRFRAM		Not Availa	able	Kernel Dr	iver
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Kernel Dr		Interface	c:\winnt\s	ystem32\dri	ivers\netbio	s.sys	False pptpminip		Stopped WAN Mir	OK niport (PPT)	_	False	Fal
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ptilink c:\winnt\s	Direct Par ystem32\dri	allel Link I vers\ptilink		Kernel Dr	iver	True	tdasync Kernel Dr	TDASYN iver	C False		ystem32\dr Stopped	rivers\tdasyı OK	nc.sys Ignore
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Disabled	Stopped	OK	Normal	False	False		Driver	False	Manual	Stopped		Ignore	False
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redbook	Digital CI ystem32\dri		yback Filte	er Driver Kernel Dri	ivor	False	ultra66 Disabled	ultra66	Not Avail OK		Kernel Di False		False
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s3inc	S3Inc		•	ivers\s3mt3		Kernel	c:\winnt\s	ystem32\dr	ivers\updat	e.sys	Kernel Di		True
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serenum	Serenum I	Filter Drive	r c:\winnt\s	ystem32\dri	vers\sereni	ım.sys			ivers\usbhu		Kernel Di	river	True
Kernel Dr		True	Manual	Running	OK	Normal	Manual	Running		Normal	False	True	I/1
False serial	True Serial port	driver	c:\winnt\s	ystem32\dri	ivers\serial.	.sys	vgasave Driver	True	System	ystem32\dri Running		ys Ignore	Kernel False
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spud Kernel Dr		ırpose Utili True	Manual	Running		ivers\spud.sys Normal	OS Os2LibPa	Windows <sub>2</sub> th	_	SYSTEN> Root%\syste		111;	<system></system>
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TEMP %USERPROFILE%\Local Settings\Temp	explorer.exe c:\winnt\explorer.exe 864 8 204800
TPCC-3WAY\Administrator	1413120 11/1/2001 11:16:00 AM 5.00.3315.2846 237.27 KB
TMP %USERPROFILE%\Local Settings\Temp TPCC-3WAY\Administrator	(242,960 bytes) 10/22/2001 1:23:25 PM svchost.exe c:\winnt\system32\svchost.exe 1064 8
TPCC-3 WAT (Administrator	204800 1413120 11/1/2001 11:16:09 AM 5.00.2134.1
[Jobs]	7.77 KB (7,952 bytes) 12/7/1999 7:00:00 AM
[****]	mdm.exe c:\winnt\system32\mdm.exe 1132 8 204800
[ Following are sub-categories of this main category ]	1413120 11/1/2001 11:16:12 AM 6.00.8424 121.29 KB (124,200
	bytes) 10/19/2001 6:48:28 AM
[Print]	cmd.exe c:\winnt\system32\cmd.exe 592 8 204800
	1413120 11/1/2001 11:19:31 AM 5.00.2195.2104 230.77 KB
Document Size Owner Notify Status Time Submitted	(236,304 bytes) 12/7/1999 7:00:00 AM
Start Time Until Time Elapsed Time Pages Printed Job ID	cmd.exe c:\winnt\system32\cmd.exe 952 8 204800
Priority Parameters Driver Name Print Processor Host Print	1413120 11/1/2001 11:20:27 AM 5.00.2195.2104 230.77 KB
Queue Data Type Name Unknown U	(236,304 bytes) 12/7/1999 7:00:00 AM cmd.exe c:\winnt\system32\cmd.exe 472 8 204800
Unknown Unknown Unknown Unknown Unknown Unknown Unknown Unknown	1413120 11/1/2001 5:00:53 PM 5.00.2195.2104 230.77 KB
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	mmc.exe c:\winnt\system32\mmc.exe 620 8 204800
[Network Connections]	1413120 11/1/2001 5:02:52 PM 5.00.2195.2301 589.27 KB
	(603,408 bytes) 10/22/2001 1:23:02 PM
Local Name Remote Name Type Status User Name	rsvp.exe c:\winnt\system32\rsvp.exe 1104 8 204800
E: \\192.168.132.253\\\\ Disk OK	1413120 11/1/2001 5:04:50 PM 5.00.2167.1 172.77 KB
TPCC-3WAY\Administrator	(176,912 bytes) 12/7/1999 7:00:00 AM
(n : m   1	G 11M 11 1
[Running Tasks]	[Loaded Modules]
Name Path Process ID Priority Min Working Set Max	Name Version Size File Date Manufacturer Path
Working Set Start Time Version Size File Date	traffic.dll 5.00.2139.1 30.77 KB (31,504 bytes) 12/7/1999
system idle process Not Available 0 0 Not	7:00:00 AM Microsoft Corporation
Available Not Available Not Available Unknown Unknown	c:\winnt\system32\traffic.dll
Unknown	rsvp.exe 5.00.2167.1 172.77 KB (176,912 bytes) 12/7/1999
system Not Available 8 8 0 1413120	7:00:00 AM Microsoft Corporation
Not Available Unknown Unknown Unknown	c:\winnt\system32\rsvp.exe
smss.exe c:\winnt\system32\smss.exe 160 11 204800	wbemprox.dll 1.50.1085.0045 40.08 KB (41,040 bytes)
1413120 11/1/2001 11:15:25 AM 5.00.2195.2901 44.27 KB	10/22/2001 1:23:32 PM Microsoft Corporation
(45,328 bytes) 12/7/1999 7:00:00 AM	c:\winnt\system32\wbem\wbemprox.dll
csrss.exe Not Available 188 13 Not Available Not Available 11/1/2001 11:15:30 AM Unknown Unknown	rassapi.dll 5.00.2188.1 14.27 KB (14,608 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation
Unknown	c:\winnt\system32\rassapi.dll
winlogon.exe c:\winnt\system32\winlogon.exe 208 13	adsnt.dll 5.00.2195.2778 195.27 KB (199,952 bytes) 10/22/2001
204800 1413120 11/1/2001 11:15:32 AM 5.00.2195.2953	1:22:49 PM Microsoft Corporation
173.77 KB (177,936 bytes) 12/7/1999 7:00:00 AM	c:\winnt\system32\adsnt.dll
services.exe c:\winnt\system32\services.exe 236 9	dbghelp.dll 5.00.2195.2104 159.27 KB (163,088 bytes)
204800 1413120 11/1/2001 11:15:34 AM 5.00.2195.2780	5/4/2001 12:05:02 PM Microsoft Corporation
86.77 KB (88,848 bytes) 12/7/1999 7:00:00 AM	c:\winnt\system32\dbghelp.dll
lsass.exe c:\winnt\system32\lsass.exe 248 9 204800	localsec.dll 5.00.2195.2130 230.27 KB (235,792 bytes)
1413120 11/1/2001 11:15:34 AM 5.00.2195.2964 32.77 KB	10/22/2001 1:23:02 PM Microsoft Corporation
(33,552 bytes) 12/7/1999 7:00:00 AM svchost.exe c:\winnt\system32\sychost.exe 400 8	c:\winnt\system32\localsec.dll devmgr.dll 5.00.2166.1 215.77 KB (220.944 bytes) 12/7/1999
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7.77 KB (7,952 bytes) 12/7/1999 7:00:00 AM	c:\winnt\system32\devmgr.dll
msdtc.exe c:\winnt\system32\msdtc.exe 432 8 204800	filemgmt.dll 5.00.2195.2165 287.27 KB (294,160 bytes)
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(6,928 bytes) 10/19/2001 6:45:31 AM	10/22/2001 1:22:58 PM Microsoft Corporation c:\winnt\system32\filemgmt.dll
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(6,928 bytes)       10/19/2001 6:45:31 AM         svchost.exe       c:\winnt\system32\svchost.exe       564       8         204800       1413120       11/1/2001 11:15:42 AM       5.00.2134.1         7.77 KB (7,952 bytes) 12/7/1999 7:00:00 AM       tcpsvcs.exe       c:\winnt\system32\tcpsvcs.exe       616       8         204800       1413120       11/1/2001 11:15:42 AM       5.00.2134.1         24.77 KB (25,360 bytes)       12/7/1999 7:00:00 AM         winngmt.exe       c:\winnt\system32\wbem\winngmt.exe       636       8         204800       1413120       11/1/2001 11:15:43 AM       1.50.1085.0029         192.08 KB (196,685 bytes)       10/22/2001 1:23:32 PM       inetinfo.exe       c:\winnt\system32\inetsrv\inetinfo.exe       680       8	10/22/2001 1:22:58 PM       Microsoft Corporation         c:\winnt\system32\filemgmt.dll       pdh.dll 5.00.2195.2739 147.77 KB (151,312 bytes) 10/22/2001         1:23:15 PM       Microsoft Corporation         c:\winnt\system32\pdh.dll       smogefg.dll 5.00.2195.2485 273.27 KB (279,824 bytes)         10/22/2001 1:23:19 PM       Microsoft Corporation         c:\winnt\system32\smlogefg.dll       cabinet.dll 5.00.2147.1 54.77 KB (56,080 bytes)       12/7/1999         7:00:00 AM       Microsoft Corporation         c:\winnt\system32\cabinet.dll       312.27 KB (319,760 bytes)
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riched20.dll 5.30.23.1205 421.27 KB (431,376 bytes) 10/22/2001 1:23:16 PM Microsoft Corporation	mshtmled.dll 5.00.3315.2870 227.27 KB (232,720 bytes) 10/22/2001 1:23:05 PM Microsoft Corporation
c:\winnt\system32\riched20.dll riched32.dll	c:\winnt\system32\mshtmled.dll imgutil.dll 5.00.3315.2870
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ntmsmgr.dll 1,0,0,1 427.77 KB (438,032 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation and HighGround Systems, Inc.	msls31.dll 3.10.337.0 145.27 KB (148,752 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\msls31.dll
c:\winnt\system32\ntmsmgr.dll mmfutil.dll1.50.1085.0000 32.06 KB (32,829 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation	wininet.dll 5.00.3315.1000 456.77 KB (467,728 bytes) 10/22/2001 1:23:23 PM Microsoft Corporation c:\winnt\system32\wininet.dll
c:\winnt\system32\mmfutil.dll	msdbg.dll 6.00.8424 67.50 KB (69,120 bytes) 10/19/2001 6:48:28
logdrive.dll 1.50.1085.0000 200.06 KB (204,863 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\logdrive.dll	AM Microsoft Corporation c:\winnt\system32\msdbg.dll shdoclc.dll 5.00.3315.2879 324.50 KB (332,288 bytes) 10/22/2001 1:23:18 PM Microsoft Corporation
dfigres.dll 5.00.2150.1 27.50 KB (28,160 bytes) 12/7/1999 7:00:00 AM Executive Software International, Inc.	c:\winnt\system32\shdoclc.dll pdm.dll 6.00.8424 179.27 KB (183,574 bytes) 10/19/2001 6:48:28
c:\winnt\system32\dfrgres.dll	AM Microsoft Corporation c:\winnt\system32\pdm.dll
dfrgsnap.dll 5.00.2195.2104 41.77 KB (42,768 bytes) 10/22/2001 1:22:54 PM Executive Software International, Inc. c:\winnt\system32\dfrgsnap.dll	mshtml.dll 5.00.3315.2870 2.24 MB (2,345,232 bytes) 10/22/2001 1:23:04 PM Microsoft Corporation c:\winnt\system32\mshtml.dll
dmdskres.dll 2195.2104.297.3 119.50 KB (122,368 bytes)	mlang.dll 5.00.3103.1000 510.77 KB (523,024 bytes) 10/22/2001
10/22/2001 1:22:55 PM Microsoft Corp., VERITAS Software c:\winnt\system32\dmdskres.dll	1:23:02 PM Microsoft Corporation c:\winnt\system32\mlang.dll
dmutil.dll 2195.2104.297.3 42.27 KB (43,280 bytes) 10/22/2001 1:22:55 PM VERITAS Software Corp.	urlmon.dll 5.00.3315.1000 441.27 KB (451,856 bytes) 10/22/2001 1:23:21 PM Microsoft Corporation
c:\winnt\system32\dmutil.dll ntmsapi.dll5.00.1948.1 51.77 KB (53,008 bytes) 10/22/2001	c:\winnt\system32\urlmon.dll browselc.dll 5.00.3315.2846 34.50 KB (35,328 bytes)
1:23:13 PM Microsoft Corporation	10/22/2001 1:22:51 PM Microsoft Corporation
c:\winnt\system32\ntmsapi.dll dmdskmgr.dll 2215.2215.297.3 160.27 KB (164,112 bytes)	c:\winnt\system32\browselc.dll faxshell.dll5.00.2134.1
10/22/2001 1:22:55 PM Microsoft Corp., VERITAS Software	Microsoft Corporation c:\winnt\system32\faxshell.dll
c:\winnt\system32\dmdskmgr.dll mycomput.dll 5.00.2134.1 107.77 KB (110,352 bytes)	msacm32.dll 5.00.2134.1 65.27 KB (66,832 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation
12/7/1999 7:00:00 AM Microsoft Corporation	c:\winnt\system32\msacm32.dll
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12/7/1999 7:00:00 AM Microsoft Corporation	c:\winnt\system32\avifil32.dll
c:\winnt\system32\mmcndmgr.dll mfc42u.dll 6.00.8665.0 972.05 KB (995,384 bytes) 12/7/1999	msvfw32.dll 5.00.2134.1 113.77 KB (116,496 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation
7:00:00 AM Microsoft Corporation	c:\winnt\system32\msvfw32.dll
c:\winnt\system32\mfc42u.dll mmc.exe 5.00.2195.2301 589.27 KB (603,408 bytes) 10/22/2001	docprop2.dll 5.00.2178.1 297.77 KB (304,912 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation
1:23:02 PM Microsoft Corporation	c:\winnt\system32\docprop2.dll
c:\winnt\system32\mmc.exe cmd.exe 5.00.2195.2104 230.77 KB (236.304 bytes) 12/7/1999	linkinfo.dll5.00.2134.1 15.77 KB (16,144 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation
cmd.exe 5.00.2195.2104 230.77 KB (236,304 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation	7:00:00 AM Microsoft Corporation c:\winnt\system32\\linkinfo.dll
c:\winnt\system32\cmd.exe	msi.dll 1.11.2405.0 1.69 MB (1,767,184 bytes) 10/22/2001
mdm.exe 6.00.8424 121.29 KB (124,200 bytes) 10/19/2001 6:48:28  AM Microsoft Corporation c:\winnt\system32\mdm.exe	1:23:05 PM Microsoft Corporation c:\winnt\system32\msi.dll
tapisrv.dll 5.00.2195.2955 169.27 KB (173,328 bytes) 10/22/2001	powrprof.dll 5.00.3103.1000 13.27 KB (13,584 bytes)
1:23:20 PM Microsoft Corporation c:\winnt\system32\tapisrv.dll	10/22/2001 1:23:15 PM Microsoft Corporation c:\winnt\system32\powrprof.dll
thumbvw.dll 5.00.2920.0000 183.27 KB (187,664 bytes)	batmeter.dll 5.00.3103.1000 20.27 KB (20,752 bytes)
12/7/1999 7:00:00 AM Microsoft Corporation	10/22/2001 1:22:50 PM Microsoft Corporation
c:\winnt\system32\thumbvw.dll imm32.dll 5.00.2195.2821 94.27 KB (96,528 bytes) 10/22/2001	c:\winnt\system32\batmeter.dll stobject.dll5.00.2195.2780 79.27 KB (81,168 bytes) 10/22/2001
1:22:59 PM Microsoft Corporation	1:23:20 PM Microsoft Corporation
c:\winnt\system32\imm32.dll usp10.dll 1.0325.2195.2104 308.27 KB (315,664 bytes) 10/22/2001	c:\winnt\system32\stobject.dll webcheck.dll 5.00.3315.1000 251.77 KB (257,808 bytes)
1:23:21 PM Microsoft Corporation	10/22/2001 1:23:23 PM Microsoft Corporation
c:\winnt\system32\usp10.dll	c:\winnt\system32\webcheck.dll
diskcopy.dll 5.00.2134.1 15.77 KB (16,144 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation	ntshrui.dll 5.00.2134.1 46.77 KB (47,888 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation
c:\winnt\system32\diskcopy.dll	c:\winnt\system32\ntshrui.dll

mydocs.dll5.00.2920.0000 55.77 KB (57,104 bytes) 12/7/1999	coadmin.dll 5.00.0984 39.27 KB (40,208 bytes) 10/22/2001
7:00:00 AM Microsoft Corporation	1:24:19 PM Microsoft Corporation
c:\winnt\system32\mydocs.dll	c:\winnt\system32\inetsrv\coadmin.dll
browseui.dll 5.00.3315.2846 788.77 KB (807,696 bytes)	iisadmin.dll 5.00.0984 15.27 KB (15,632 bytes) 10/22/2001
10/22/2001 1:22:51 PM Microsoft Corporation	1:24:20 PM Microsoft Corporation
c:\winnt\system32\browseui.dll	c:\winnt\system32\inetsrv\iisadmin.dll
shdocvw.dll 5.00.3315.2879 1.05 MB (1,104,144 bytes)	rpcref.dll 5.00.0984 4.27 KB (4,368 bytes) 10/22/2001 1:24:21 PM
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c:\winnt\system32\shdocvw.dll	iisrtl.dll 5.00.0984 119.77 KB (122,640 bytes) 10/22/2001 1:22:59 PM
explorer.exe 5.00.3315.2846 237.27 KB (242,960 bytes)	Microsoft Corporation c:\winnt\system32\iisrtl.dll
10/22/2001 1:23:25 PM Microsoft Corporation	inetinfo.exe 5.00.0984 14.27 KB (14,608 bytes) 10/22/2001
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iislog.dll 5.00.0984 75.27 KB (77,072 bytes) 10/22/2001 1:24:20 PM	c:\winnt\system32\inetsrv\inetinfo.exe
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Microsoft Corporation c:\winnt\system32\ntlsapi.dll	c:\winnt\system32\wshnetbs.dll
httpext.dll 0.9.3940.21 435.27 KB (445,712 bytes) 10/22/2001	ntmarta.dll 5.00.2195.2862 98.77 KB (101,136 bytes) 10/22/2001
1:24:19 PM Microsoft Corporation	1:23:12 PM Microsoft Corporation
c:\winnt\system32\inetsrv\httpext.dll	c:\winnt\system32\ntmarta.dll
rpcproxy.dll 5.00.2195.2780 16.27 KB (16,656 bytes)	provthrd.dll 1.50.1085.0000 68.07 KB (69,708 bytes)
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10/22/2001 1:24:14 PM Microsoft Corporation	10/22/2001 12:58:22 PM Microsoft Corporation
c:\winnt\system32\rpcproxy\rpcproxy.dll	c:\winnt\system32\wbem\provthrd.dll
fpexedll.dll 4.0.2.4324 20.06 KB (20,541 bytes) 10/22/2001	ntevt.dll 1.50.1085.0000 192.06 KB (196,669 bytes) 12/7/1999
1:24:13 PM Microsoft Corporation c:\program	7:00:00 AM Microsoft Corporation
files\common files\microsoft shared\web server extensions\40\bin\fpexedll.dll	c:\winnt\system32\wbem\ntevt.dll
md5filt.dll 5.00.0984 32.77 KB (33,552 bytes) 10/22/2001 1:24:20 PM	perfos.dll 5.00.2155.1 21.27 KB (21,776 bytes) 12/7/1999
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Microsoft Corporation c:\winnt\system32\inetsrv\md5filt.dll	7:00:00 AM Microsoft Corporation
gzip.dll 5.00.0984 30.27 KB (30,992 bytes) 10/22/2001 1:24:19 PM	c:\winnt\system32\perfos.dll
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sspifilt.dll 5.00.0984 43.27 KB (44,304 bytes) 10/22/2001 1:24:21 PM	12/7/1999 7:00:00 AM Microsoft Corporation
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iscomlog.dll 5.00.0984 24.77 KB (25,360 bytes) 10/22/2001	cimwin32.dll 1.50.1085.0038 1.02 MB (1,073,232 bytes)
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Microsoft Corporation c:\winnt\system32\inetsloc.dll	wbemess.dll 1.50.1085.0039 364.07 KB (372,804 bytes)
iisfecnv.dll5.00.0984 7.27 KB (7,440 bytes) 10/22/2001 12:53:57 PM	10/22/2001 1:23:32 PM Microsoft Corporation
Microsoft Corporation c:\winnt\system32\inetsrv\iisfecnv.dll	c:\winnt\system32\wbem\wbemess.dll
isatq.dll 5.00.0984 60.27 KB (61,712 bytes) 10/22/2001 1:24:20 PM	
Microsoft Corporation c:\winnt\system32\inetsrv\isatq.dll	10/22/2001 1:23:29 PM Microsoft Corporation
infocomm.dll 5.00.0984 238.27 KB (243,984 bytes) 10/22/2001	c:\winnt\system32\wbem\fastprox.dll
1:24:20 PM Microsoft Corporation	wbemcore.dll 1.50.1085.0036 628.07 KB (643,140 bytes)
c:\winnt\system32\inetsrv\infocomm.dll	10/22/2001 1:23:31 PM Microsoft Corporation
w3svc.dll 5.00.0984 343.27 KB (351,504 bytes) 10/22/2001 1:24:21 PM	c:\winnt\system32\wbem\wbemcore.dll
Microsoft Corporation c:\winnt\system32\inetsrv\w3svc.dll	wbemcomn.dll 1.50.1085.0021 692.07 KB (708,675 bytes)
security.dll5.00.2154.1 5.77 KB (5,904 bytes) 12/7/1999 7:00:00 AM	10/22/2001 1:23:31 PM Microsoft Corporation
Microsoft Corporation c:\winnt\system32\security.dll	c:\winnt\system32\wbem\wbemcomn.dll
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wamreg.dll5.00.0984 45.77 KB (46,864 bytes) 10/22/2001 1:24:21 PM	6:45:24 AM Microsoft Corporation
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metadata.dll 5.00.0984 68.77 KB (70,416 bytes) 10/22/2001	tcpsvcs.exe 5.00.2134.1 24.77 KB (25,360 bytes)
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	ntmsdba.dll 5.00.2195.2779 167.27 KB (171,280 bytes)
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nsepm.dll 5.00.0984 43.27 KB (44,304 bytes) 10/22/2001 1:24:21 PM	c:\winnt\system32\ntmsdba.dll
Microsoft Corporation c:\winnt\system32\inetsrv\nsepm.dll	rasdlg.dll 5.00.2195.2671 514.27 KB (526,608 bytes) 12/7/1999
admwprox.dll 5.00.0984 31.77 KB (32,528 bytes) 10/22/2001	7:00:00 AM Microsoft Corporation
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	O. William Scotti D. Luddig. all
c:\winnt\system32\admwprox.dll	

netcfgx.dll 5.00.2195.2228 534.77 KB (547,600 bytes) 10/22/2001 1:23:10 PM Microsoft Corporation	iasrad.dll 5.00.2139.1 94.27 KB (96,528 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation
c:\winnt\system32\netcfgx.dll	c:\winnt\system32\iasrad.dll
sens.dll 5.00.2163.1 36.77 KB (37,648 bytes) 12/7/1999	iassam.dll 5.00.2160.1 96.27 KB (98,576 bytes) 12/7/1999
7:00:00 AM Microsoft Corporation	7:00:00 AM Microsoft Corporation
c:\winnt\system32\sens.dll	c:\winnt\system32\iassam.dll
rasmans.dll 5.00.2195.2728 147.27 KB (150,800 bytes)	iasads.dll 5.00.2134.1 73.77 KB (75,536 bytes) 12/7/1999
10/22/2001 1:23:16 PM Microsoft Corporation	7:00:00 AM Microsoft Corporation
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c:\winnt\system32\rasmans.dll	c:\winnt\system32\iasads.dll
wmi.dll 5.00.2191.1 6.27 KB (6,416 bytes) 12/7/1999 7:00:00 AM	iaspolcy.dll 5.00.2134.1 25.27 KB (25,872 bytes)
Microsoft Corporation c:\winnt\system32\wmi.dll	12/7/1999 7:00:00 AM Microsoft Corporation
netshell.dll5.00.2195.2779 457.27 KB (468,240 bytes) 10/22/2001	c:\winnt\system32\iaspolcy.dll
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1:23:11 PM Microsoft Corporation	iassvcs.dll 5.00.2195.2104 58.77 KB (60,176 bytes) 10/22/2001
c:\winnt\system32\netshell.dll	1:22:59 PM Microsoft Corporation
netman.dll 5.00.2195.2779 89.27 KB (91,408 bytes) 10/22/2001	c:\winnt\system32\iassvcs.dll
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c:\winnt\system32\netman.dll	1:22:58 PM Microsoft Corporation
es.dll 2000.2.3471.1 222.27 KB (227,600 bytes) 10/22/2001	c:\winnt\system32\iassdo.dll
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iashlpr.dll 5.00.2184.1 33.27 KB (34,064 bytes) 12/7/1999	c:\winnt\system32\ntmssvc.dll
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iasacct.dll 5.00.2134.1 28.27 KB (28,944 bytes) 12/7/1999	mtxoci.dll 2000.2.3471.1 101.77 KB (104,208 bytes) 10/22/2001
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iasuserr.dll5.00.2134.1 25.77 KB (26,384 bytes) 12/7/1999	resutils.dll 5.00.2195.2787 39.77 KB (40,720 bytes) 10/22/2001
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iasnap.dll 5.00.2195.2104 58.77 KB (60,176 bytes) 10/22/2001	clusapi.dll 5.00.2195.2104 54.27 KB (55,568 bytes) 10/22/2001
1:22:58 PM Microsoft Corporation	1:22:52 PM Microsoft Corporation
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iaspipe.dll 5.00.2134.1 41.77 KB (42,768 bytes) 12/7/1999	msvcp50.dll 5.00.7051 552.50 KB (565,760 bytes) 12/7/1999
7:00:00 AM Microsoft Corporation	7:00:00 AM Microsoft Corporation
c:\winnt\system32\iaspine.dll	
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clbcatq.dll 2000.2.3471.1 496.77 KB (508,688 bytes) 10/22/2001	crypt32.dll 5.131.2195.2833 451.27 KB (462,096 bytes) 10/22/2001
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oleaut32.dll 2.40.4517 612.27 KB (626,960 bytes) 12/7/1999	wintrust.dll 5.131.2195.2779 162.27 KB (166,160 bytes)
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netui2.dll 5.00.2134.1 280.27 KB (286,992 bytes) 12/7/1999	cometl32.dll 5.81 537.77 KB (550,672 bytes) 12/7/1999
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mprui.dll 5.00.2195.2104 54.77 KB (56,080 bytes) 10/22/2001	shlwapi.dll5.00.3315.1000 282.77 KB (289,552 bytes) 10/22/2001
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c:\winnt\system32\mprui.dll	c:\winnt\system32\shlwapi.dll
netui1.dll 5.00.2134.1 210.27 KB (215,312 bytes) 12/7/1999	shell32.dll 5.00.3315.2902 2.25 MB (2,359,056 bytes) 10/22/2001
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netui0.dll 5.00.2134.1 70.27 KB (71,952 bytes) 12/7/1999	msgina.dll 5.00.2195.2779 324.27 KB (332,048 bytes) 12/7/1999
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ntlanman.dll 5.00.2157.1 35.27 KB (36,112 bytes)	wsock32.dll 5.00.2195.2871 21.27 KB (21,776 bytes)
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mpr.dll 5.00.2195.2779 53.27 KB (54,544 bytes) 10/22/2001	dnsapi.dll 5.00.2195.2785 130.77 KB (133,904 bytes) 10/22/2001
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cscui.dll 5.00.2195.2959 228.27 KB (233,744 bytes) 10/22/2001 1:22:53 PM Microsoft Corporation c:\winnt\system32\cscui.dll winspool.drv 5.00.2195.2780 109.77 KB (112,400 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\winspool.drv winscard.dll 5.00.2134.1 77.27 KB (79,120 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\winscard.dll wlnotify.dll 5.00.2195.2780 53.77 KB (55,056 bytes) 10/22/2001 1:23:24 PM Microsoft Corporation c:\winnt\system32\wlnotify.dll cscdll.dll 5.00.2195.2401 98.27 KB (100,624 bytes) 10/22/2001 1:22:53 PM Microsoft Corporation c:\winnt\system32\cscdll.dll lz32.dll 5.00.2134.1 9.77 KB (10,000 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\cscdll.dll version.dll 5.00.2134.1 15.77 KB (16,144 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation	wldap32.dll
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user32.dll 5.00.2195.28	392.7	7 KB (402,192 bytes)	12/7/1999
7:00:00 AM M	licrosoft Corpor	ration	
c:\winnt\system32\user3	32.dll		
gdi32.dll 5.00.2195.27	778 228.7	7 KB (234,256 bytes)	12/7/1999
7:00:00 AM M			
c:\winnt\system32\gdi32	2.dll		
rpcrt4.dll 5.00.2195.28			10/22/2001
1:23:17 PM M	licrosoft Corpor	ration	
c:\winnt\system32\rpcrt4			
advapi32.dll 5.			208 bytes)
12/7/1999 7:00:00 AM	Micro	soft Corporation	
c:\winnt\system32\advap			
kernel32.dll 5.		714.77 KB (731,9	920 bytes)
12/7/1999 7:00:00 AM	Micro	soft Corporation	
c:\winnt\system32\kerne			
msvcrt.dll 6.10.8924.0	284.0	5 KB (290,869 bytes)	5/4/2001
12:05:02 PM M		ration	
c:\winnt\system32\msvc			
winlogon.exe 5.			936 bytes)
12/7/1999 7:00:00 AM		soft Corporation	
c:\winnt\system32\winlo			
sfcfiles.dll 5.00.2195.29			10/22/2001
1:23:17 PM M		ation	
c:\winnt\system32\sfcfile			
ntdll.dll 5.00.2195.27			5/4/2001
12:05:02 PM M		ation	
c:\winnt\system32\ntdll.			
smss.exe 5.00.2195.29	001 44.27	KB (45,328 bytes)	12/7/1999
7:00:00 AM M		ration	
c:\winnt\system32\smss.	.exe		

## [Services]

Display N	ame	Name	State	Start Mode	Service Ty	pe
Path	Error Cont	trol	Start Name	eTag ID		
Alerter	Alerter	Stopped	Manual	Share Proc	ess	
c:\winnt\s	ystem32\ser	vices.exe	Normal	LocalSyste	em	0
Application	n Managen	nent	AppMgmt	Stopped	Manual	Share
Process	c:\winnt\sy	ystem32\ser	vices.exe	Normal	LocalSyste	em
Computer	Browser	Browser	Stopped	Manual	Share Proc	ess
c:\winnt\s	ystem32\ser	vices.exe	Normal	LocalSyste	em	0
Indexing S	Service	cisvc	Stopped	Manual	Share Proc	ess
c:\winnt\s	ystem32\cis	vc.exe	Normal	LocalSyste	em	0
ClipBook	ClipSrv	Stopped	Manual	Own Proce	ess	
c:\winnt\s	ystem32\cli	psrv.exe	Normal	LocalSyste	em	0
Distribute	d File Syste	m	Dfs	Stopped	Manual	Own
Process	c:\winnt\sy	ystem32\dfs	svc.exe	Normal	LocalSyste	em
DHCP Cli	ent	Dhcp	Stopped	Manual	Share Proc	ess
c:\winnt\s	ystem32\ser	vices.exe	Normal	LocalSyste	em	0
Logical D	isk Manage	r Administr	ative Service	ce	dmadmin	Stopped
Manual	Share Proc	ess	c:\winnt\sy	stem32\dm	admin.exe	/com
Normal	LocalSyste	em	0			
Logical D	isk Manage	rdmserver	Running	Auto	Share Proc	ess
c:\winnt\s	ystem32\ser	vices.exe	Normal	LocalSyste	em	0
DNS Clien	nt	Dnscache	Stopped	Manual	Share Proc	eess
c:\winnt\s	ystem32\ser	vices.exe	Normal	LocalSyste	em	0
Event Log	Eventlog	Running	Auto	Share Proc	ess	
c:\winnt\s	ystem32\ser	vices.exe	Normal	LocalSyste	m	0
COM + Ex			Tionna	Localbysic	7111	
COMIT	ent System			Running	Manual	Share
Process	-		em	Running		Share
	c:\winnt\sy	EventSyste	em	Running	Manual	Share
Process	c:\winnt\sy em	EventSysteystem32\svc	em	Running	Manual	
Process LocalSyst Fax Service	c:\winnt\sy em	EventSyste ystem32\svc 0 Fax	em chost.exe -k	Running	Manual Normal Own Proce	
Process LocalSyst Fax Servic c:\winnt\s	c:\winnt\sy em ce	EventSyste ystem32\svo 0 Fax xsvc.exe	em chost.exe -k Stopped	Running netsvcs Manual	Manual Normal Own Proce	ess
Process LocalSyst Fax Service:\winnt\s; Internet A	c:\winnt\sy em ce ystem32\fax	EventSyste ystem32\svc 0 Fax xsvc.exe on Service	em chost.exe -k Stopped Normal IAS	Running netsvcs Manual LocalSyste Running	Manual Normal Own Proce	ess 0
Process LocalSyst Fax Service:\winnt\s; Internet A	c:\winnt\sy em ce ystem32\fax uthenticatio c:\winnt\sy	EventSyste ystem32\svc 0 Fax xsvc.exe on Service	em chost.exe -k Stopped Normal IAS	Running netsvcs Manual LocalSyste Running	Manual Normal Own Proce em Auto	ess 0

TTC A 1 ' C '	HCADAM	т.	n ·		CI	
IIS Admin Service Process c:\winnt\s	HSADMII ystem32\ine		Running	Auto Normal	Share	
LocalSystem	0	tsi v \iiictiiii	O.CXC	INOIIIIai		
Intersite Messaging	-	Stopped	Disabled	Own Proc	229	
c:\winnt\system32\is		Normal	LocalSyste		0	
Kerberos Key Distrib		r	kdc	Stopped	Disabled	
Share Process		ystem32\lsa	ss.exe	Normal		
LocalSystem	0					
Server lanmanse		Running	Auto	Share Prod		
c:\winnt\system32\se		Normal	LocalSyste		0	
Workstation	lanmanwo		Running		Share	0
Process c:\winnt\s License Logging Ser	ystem32\ser	Vices.exe		LocalSyste Stopped		U
Own Process		stem32\lls		Normal	iviailuai	
LocalSystem	0	9 5001113 2 (115)	51 7.6/10	TTOTTIME		
TCP/IP NetBIOS He	-	LmHosts	Running	Auto	Share	
Process c:\winnt\s			_	LocalSyste	em	0
Messenger Messenge	r Stopped	Manual	Share Proc	ess		
c:\winnt\system32\se		Normal	LocalSyste		0	
NetMeeting Remote			mnmsrvc		Manual	
Own Process		ystem32\mr	nmsrvc.exe	Normal		
LocalSystem Distributed Transacti	0 on Coordina	ntor	MSDTC	Running	Auto	
Own Process		atoi ystem32\ms		Normal	Auto	
LocalSystem	1	y 5tC11152 (111)	dic.cac	TTOTTIM		
Windows Installer		Stopped	Manual	Share Proc	ess	
c:\winnt\system32\m	siexec.exe /	V	Normal	LocalSyste	em	0
	MSSQLSI		Stopped	Manual	Own	
	-1\micros~3	\mssql\binr	\sqlservr.e	ke	Normal	
LocalSystem	0	MOCOLO	ADIL	1	Cr 1	
MSSQLServerADHe Manual Own Proc	1		erverADHel n files\micro		Stopped	
server\80\tools\binn\					0	
Network DDE	NetDDE	Stopped	Manual	Share Proc	-	
c:\winnt\system32\ne	etdde.exe	Normal	LocalSyste	em	0	
Network DDE DSDN				Manual		
Process c:\winnt\s	ystem32\net	tdde eve				
			Normal		em	0
Net Logon Netlogon	Stopped	Manual	Share Proc	eess		0
Net Logon Netlogon c:\winnt\system32\ls	Stopped ass.exe	Manual Normal	Share Proc LocalSyste	cess em	0	0
Net Logon Netlogon c:\winnt\system32\ls Network Connection	Stopped ass.exe s Netman	Manual Normal Running	Share Proc LocalSyste Manual	cess em Share Prod	0 cess	
Net Logon Netlogon c:\winnt\system32\ls. Network Connection c:\winnt\system32\sv	Stopped ass.exe s Netman rchost.exe -k	Manual Normal Running netsvcs	Share Proc LocalSyste Manual Normal	cess em Share Prod LocalSyste	0 cess em	0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication	Stopped ass.exe s Netman rchost.exe -k NtFrs	Manual Normal Running	Share Proc LocalSyste Manual	cess em Share Prod LocalSyste Own Prod	0 cess em	
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide	Manual Normal Running netsvcs Stopped Ignore	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp	cess em Share Prod LocalSyste Own Prod	0 cess em ess 0	
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process	Stopped ass.exe s Netman rchost.exe -k NtFrs frs.exe port Provide c:\winnt\sy	Manual Normal Running netsvcs Stopped Ignore	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp	cess em Share Prod LocalSyste Own Prode	0 cess em ess 0	
Net Logon Netlogon c:\winnt\system32\s\ Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem	Stopped ass.exe s Netman rchost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0	Manual Normal Running a netsves Stopped Ignore er ystem32\lsa	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp ss.exe	eess em Share Prod LocalSyste Own Prodem Stopped Normal	0 cess em ess 0 Manual	
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc	Manual Normal Running a netsvcs Stopped Ignore er system32\lsa Running	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe	sess em Share Proof LocalSyste Own Proce em Stopped Normal	0 cess em ess 0 Manual	0
Net Logon Netlogon c:\winnt\system32\s\ Network Connection c:\winnt\system32\s\ File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\s\	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc cchost.exe -k	Manual Normal Running a netsvcs Stopped Ignore er system32\lsa Running a netsvcs	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe Auto Normal	sess em Share Proc LocalSyste Own Proce em Stopped Normal Share Proc LocalSyste	0 cess em ess 0 Manual	
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc cchost.exe -k PlugPlay	Manual Normal Running a netsvcs Stopped Ignore er system32\lsa Running a netsvcs Running	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe Auto Normal Auto	sess em Share Proc LocalSyste Own Proceem Stopped Normal Share Proc LocalSyste Share Proc	0 cess em ess 0 Manual cess em cess	0
Net Logon Netlogon c:\winnt\system32\ls. Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\se	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc chost.exe -k PlugPlay rvices.exe	Manual Normal Running a netsves Stopped Ignore er system32\lsa Running a netsves Running Normal	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe Auto Normal Auto LocalSyste	sess em Share Proc LocalSyste Own Proceem Stopped Normal Share Proc LocalSyste Share Proc	0 cess em ess 0 Manual cess em eess 0	0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\se IPSEC Policy Agent	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc chost.exe -k PlugPlay rvices.exe	Manual Normal Running a netsvcs Stopped Ignore er system32\lsa Running a netsvcs Running Normal int	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe Auto Normal Auto	sess em Share Proc LocalSyste Own Proceem Stopped Normal Share Proc LocalSyste Share Proceem	0 cess em ess 0 Manual cess em cess 0 Share	0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\se IPSEC Policy Agent	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc chost.exe -k PlugPlay rvices.exe PolicyAge	Manual Normal Running a netsvcs Stopped Ignore er system32\lsa Running a netsvcs Running Normal int ss.exe	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe Auto Normal Auto LocalSyste Stopped	sess em Share Proc LocalSyste Own Proceem Stopped Normal Share Proc LocalSyste Share Proceem Manual	0 cess em ess 0 Manual cess em cess 0 Share	0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Process c:\winnt\system32\sv Proce	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc chost.exe -k PlugPlay rvices.exe PolicyAge system32\lsa ProtectedS ystem32\ser	Manual Normal Running a netsves Stopped Ignore er system32\lsa Running a netsves Running Normal int ss.exe storage vices.exe	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe Auto Normal Auto LocalSyste Stopped Normal	sess em Share Proc LocalSyste Own Proceem Stopped Normal Share Proc LocalSyste Share Proceem Manual LocalSyste	0 cess em ess 0 Manual cess em cess 0 Share em Share	0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv IPSEC Policy Agent Process Access Autor Process Autor Process Autor Process C:\winnt\system32\sv IPSEC Policy Agent Process C:\wi	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc chost.exe -k PlugPlay rvices.exe PolicyAge system32\lsa ProtectedS ystem32\ser Connection	Manual Normal Running a netsves Stopped Ignore er system32\lsa Running a netsves Running Normal int ss.exe storage vices.exe Manager	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe Auto Normal Auto LocalSyste Stopped Normal Running Normal RasAuto	sess em Share Proc. LocalSyste Own Proceem Stopped Normal Share Proc. LocalSyste Share Proc. Em Manual LocalSyste Auto LocalSyste Stopped	0 cess em ess 0 Manual cess em cess 0 Share em Share em Manual	0 0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Plocess c:\winnt\system32\sv Process c:\winnt\system32\sv Proce	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc chost.exe -k PlugPlay rvices.exe PolicyAge system32\lsa ProtectedS ystem32\ser Connection c:\winnt\sy	Manual Normal Running a netsves Stopped Ignore er system32\lsa Running a netsves Running Normal int ss.exe storage vices.exe Manager	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe Auto Normal Auto LocalSyste Stopped Normal Running Normal	sess em Share Proc. LocalSyste Own Proceem Stopped Normal Share Proc. LocalSyste Share Proc. Em Manual LocalSyste Auto LocalSyste Stopped	0 cess em ess 0 Manual cess em cess 0 Share em Share em	0 0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Protected Storage Process c:\winnt\s Protected Storage Process c:\winnt\s Remote Access Auto Share Process LocalSystem	Stopped ass.exe s Netman rchost.exe -k NtFrs ffrs.exe port Provide c:\winnt\sy 0 NtmsSvc rchost.exe -k PlugPlay rvices.exe PolicyAge system32\ser Connection c:\winnt\sy 0	Manual Normal Running a netsvcs Stopped Ignore er ystem32\lsa Running a netsvcs Running Normal int ss.exe storage vices.exe Manager ystem32\svc	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp ss.exe  Auto Normal Auto LocalSyste Stopped Normal Running Normal RasAuto chost.exe -k	Share Process Share Process Stopped Normal Share Process Share Process Share Process Manual LocalSyste Auto LocalSyste Stopped netsves	0 cess em ess 0 Manual cess em cess 0 Share em Manual Normal	0 0
Net Logon Netlogon c:\winnt\system32\s\ Network Connection c:\winnt\system32\s\ File Replication c:\winnt\system32\nt\ NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\s\ Plug and Play c:\winnt\system32\s\ Plocess c:\winnt\system32\s\ Process c:\winnt\s\ Protected Storage Process c:\winnt\s\ Protected Storage Process c:\winnt\s\ Remote Access Auto Share Process LocalSystem Remote Access Connections of the content of the	Stopped ass.exe s Netman rchost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc rchost.exe -k PlugPlay rvices.exe PolicyAge rystem32\lsa ProtectedS rystem32\lsa Connection c:\winnt\sy 0 nection Man	Manual Normal Running a netsvcs Stopped Ignore er ystem32\lsa Running a netsvcs Running Normal int ss.exe storage vices.exe Manager ystem32\svc	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe Auto Normal Auto LocalSyste Stopped Normal Running Normal RasAuto chost.exe -k	Share Process Stopped Normal Share Process Stopped Normal Share Process LocalSyste Share Process Manual LocalSyste Auto LocalSyste Stopped a netsves Stopped	0 cess em ess 0 Manual cess em cess 0 Share em Manual Normal Manual	0 0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Process Constant Process Process Constant Process Constant Process Process Constant Process Process Constant Process Proc	Stopped ass.exe s Netman rchost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc rchost.exe -k PlugPlay rvices.exe PolicyAge rystem32\lsa ProtectedS rystem32\lsa Connection c:\winnt\sy 0 nection Man	Manual Normal Running a netsvcs Stopped Ignore er ystem32\lsa Running a netsvcs Running Normal int ss.exe storage vices.exe Manager ystem32\svc	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp ss.exe  Auto Normal Auto LocalSyste Stopped Normal Running Normal RasAuto chost.exe -k	Share Process Stopped Normal Share Process Stopped Normal Share Process LocalSyste Share Process Manual LocalSyste Auto LocalSyste Stopped a netsves Stopped	0 cess em ess 0 Manual cess em cess 0 Share em Manual Normal	0 0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Process LocalSystem	Stopped ass.exe s Netman rchost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc rchost.exe -k PlugPlay rvices.exe PolicyAge ystem32\lsa ProtectedS ystem32\ser Connection C:\winnt\sy 0 nection Man c:\winnt\sy 0	Manual Normal Running a netsvcs Stopped Ignore er ystem32\lsa Running a netsvcs Running Normal int ss.exe storage vices.exe Manager ystem32\svc	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp ss.exe Auto Normal Auto LocalSyste Stopped Normal Running Normal RasAuto chost.exe - k	Share Process Stopped Normal Share Process Stopped Normal Share Process LocalSyste Share Process Manual LocalSyste Auto LocalSyste Stopped a netsves Stopped	0 cess em ess 0 Manual cess em cess 0 Share em Manual Normal Manual	0 0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Process Constant Process Process Constant Process Constant Process Process Constant Process Process Constant Process Proc	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc chost.exe -k PlugPlay rvices.exe PolicyAge ystem32\lsa ProtectedSystem32\ser Connection c:\winnt\sy 0 hection Man c:\winnt\sy 0 Access	Manual Normal Running a netsves Stopped Ignore er system32\lsa Running a netsves Running Normal int ss.exe storage vices.exe Manager system32\sve ager system32\sve RemoteAc	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp ss.exe Auto Normal Auto LocalSyste Stopped Normal Running Normal RasAuto chost.exe - k	Share Proceed Normal  LocalSyste Share Proceed Normal  Manual  LocalSyste Stopped Normal  Stopped Normal	0 cess em ess 0 Manual cess em cess 0 Share em Manual Normal Manual Normal	0 0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\sv File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Process Conshare Process LocalSystem Remote Access Conshare Process LocalSystem Routing and Remote	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc chost.exe -k PlugPlay rvices.exe PolicyAge ystem32\lsa ProtectedSystem32\ser Connection c:\winnt\sy 0 hection Man c:\winnt\sy 0 Access	Manual Normal Running a netsves Stopped Ignore er system32\lsa Running a netsves Running Normal int ss.exe storage vices.exe Manager system32\sve ager system32\sve RemoteAc	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe  Auto Normal Auto LocalSyste Stopped Normal Running Normal RasAuto chost.exe -k	Share Proceed Normal  LocalSyste Share Proceed Normal  Manual  LocalSyste Stopped Normal  Stopped Normal	0 cess em ess 0 Manual cess em cess 0 Share em Manual Normal Manual Normal	0 0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\ls File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Plug and Play c:\winnt\system32\sv Process C:\winnt\system32\sv Proce	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc chost.exe -k PlugPlay rvices.exe PolicyAge ystem32\lsa ProtectedS ystem32\lsa Connection C:\winnt\sy 0 Access c:\winnt\sy 0 vice	Manual Normal Running a netsvcs Stopped Ignore er system32\lsa Running a netsvcs Running a netsvcs Running Normal ent ss.exe storage er system32\svc ager system32\svc RemoteAc system32\svc RemoteAc system32\svc RemoteAc system32\svc RemoteAc system32\svc RemoteRef	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe  Auto Normal Auto LocalSyste Stopped Normal Running Normal RasAuto chost.exe -k	Share Process Stopped Normal Share Process Stopped Normal Share Process Share Process Manual LocalSyste Auto LocalSyste Stopped Inetsves Stopped Inetsves Stopped Inetsves Stopped Inetsves Stopped Inetsves Stopped Inetsves	0 cess em ess 0 Manual cess em cess 0 Share em Manual Normal Manual Normal	0 0
Net Logon Netlogon c:\winnt\system32\ls Network Connection c:\winnt\system32\ls File Replication c:\winnt\system32\nt NT LM Security Sup Share Process LocalSystem Removable Storage c:\winnt\system32\sy Plug and Play c:\winnt\system32\sy Plug and Play c:\winnt\system32\sy Process C:\winnt\system32\system Remote Access Cons Share Process LocalSystem Routing and Remote Share Process LocalSystem	Stopped ass.exe s Netman chost.exe -k NtFrs frs.exe port Provide c:\winnt\sy 0 NtmsSvc chost.exe -k PlugPlay rvices.exe PolicyAge ystem32\lsa ProtectedS ystem32\lsa Connection C:\winnt\sy 0 Access c:\winnt\sy 0 vice	Manual Normal Running a netsves Stopped Ignore er system32\lsa Running a netsves Running a netsves Running Normal ent ss.exe storage vices.exe a Manager system32\sve ager system32\sve RemoteAc system32\sve ager ager system32\sve ager ager system32\sve ager ager ager system32\sve ager ager ager ager ager ager ager age	Share Proc LocalSyste Manual Normal Manual LocalSyste NtLmSsp sss.exe  Auto Normal Auto LocalSyste Stopped Normal Running Normal RasAuto chost.exe -k	Share Proceed Normal  LocalSyste Share Proceed Normal  Manual  LocalSyste Stopped Normal  Stopped Normal	0 cess em ess 0 Manual cess em cess 0 Share em Manual Normal Manual Normal Disabled Normal	0 0

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Remote Procedure Call (RPC) Locator RpcLocator Stopped	Accessories\Accessibility Default User:Accessories\Accessibility
Manual Own Process c:\winnt\system32\locator.exe Normal LocalSystem 0	Default User Accessories\Entertainment Default User:Accessories\Entertainment
Remote Procedure Call (RPC) RpcSs Running Auto Share	Default User
Process c:\winnt\system32\svchost -k rpcss Normal	Accessories\System Tools Default User:Accessories\System Tools
LocalSystem 0	Default User
QoS Admission Control (RSVP) RSVP Running Auto Own Process c:\winnt\system32\rsvp.exe-s Normal LocalSystem	Startup Default User:Startup Default User  O Accessories All Users:Accessories All Users
Security Accounts Manager SamSs Running Auto Share	Accessories Accessibility All Users: Accessories Accessibility
Process c:\winnt\system32\lsass.exe Normal LocalSystem	0 All Users
Smart Card Helper SCardDrv Stopped Manual Share Process	Accessories\Communications All Users:Accessories\Communications
c:\winnt\system32\scardsvr.exe Ignore LocalSystem 0 Smart Card SCardSvr Stopped Manual Share Process	All Users Accessories\Entertainment All Users:Accessories\Entertainment
c:\winnt\system32\scardsvr.exe Ignore LocalSystem 0	All Users
Task Scheduler Schedule Stopped Manual Share Process	Accessories\Games All Users:Accessories\Games All Users
c:\winnt\system32\mstask.exe Normal LocalSystem 0	Accessories\Microsoft Script Debugger All Users:Accessories\Microsoft
RunAs Service seclogon Stopped Manual Share Process c:\winnt\system32\services.exe Ignore LocalSystem 0	Script Debugger All Users Accessories\System Tools All Users:Accessories\System Tools
System Event Notification SENS Stopped Manual Share	All Users All Osers. Accessories System Tools
Process c:\winnt\system32\svchost.exe -k netsvcs Normal	Administrative Tools All Users: Administrative Tools All Users
LocalSystem 0	Microsoft SQL Server All Users:Microsoft SQL Server All Users
ServeRAID Manager Agent ServeRAIDManagerAgent Stopped	ServeRAID Manager All Users: ServeRAID Manager All Users
Manual Own Process c:\program files\raidman\raidserv.exe Normal LocalSystem 0	Startup All Users:Startup All Users Accessories TPCC-3WAY\Administrator:Accessories
Internet Connection Sharing SharedAccess Stopped Manual	TPCC-3WAY\Administrator
Share Process c:\winnt\system32\svchost.exe -k netsvcs Normal	Accessories\Accessibility
LocalSystem 0	TPCC-3WAY\Administrator:Accessories\Accessibility
Simple TCP/IP Services SimpTcp Running Auto Share Process c:\winnt\system32\tcpsvcs.exe Normal LocalSystem	TPCC-3WAY\Administrator 0 Accessories\Entertainment
Print Spooler Spooler Stopped Manual Own Process	TPCC-3WAY\Administrator:Accessories\Entertainment
c:\winnt\system32\spoolsv.exe Normal LocalSystem 0	TPCC-3WAY\Administrator
SQLSERVERAGENT Stopped	Accessories\System Tools
Manual Own Process c:\progra~1\micros~3\mssql\binn\sqlagent.e:  Normal LocalSystem 0	te TPCC-3WAY\Administrator:Accessories\System Tools TPCC-3WAY\Administrator
Performance Logs and Alerts SysmonLog Stopped Manual	Startup TPCC-3WAY\Administrator:Startup
Own Process c:\winnt\system32\smlogsvc.exe Normal	TPCC-3WAY\Administrator
LocalSystem 0	[Charter Duraness]
Telephony TapiSrv Running Manual Share Process c:\winnt\system32\svchost.exe -k tapisrv Normal LocalSystem	[Startup Programs]
Terminal Services TermService Stopped Disabled Own	Program Command User NameLocation
Process c:\winnt\system32\termsrv.exe Normal LocalSystem	0 Service Manager c:\progra~1\micros~3\80\tools\binn\sqlmangr.exe /n
Telnet TlntSvr Stopped Manual Own Process	All Users Common Startup
c:\winnt\system32\tlntsvr.exe Normal LocalSystem 0 Distributed Link Tracking Server TrkSvr Stopped Manual Share	[OLE Registration]
Process c:\winnt\system32\services.exe Normal LocalSystem	0
Distributed Link Tracking Client TrkWks Stopped Manual Share	Object Local Server
Process c:\winnt\system32\services.exe Normal LocalSystem	0 Sound (OLE2) sndrec32.exe
Uninterruptible Power Supply UPS Stopped Manual Own Process c:\winnt\system32\ups.exe Normal LocalSystem	Media Clip mplay32.exe 0 Video Clipmplay32.exe /avi
Utility Manager UtilMan Stopped Manual Own Process	MIDI Sequence mplay32.exe /mid
c:\winnt\system32\utilman.exe Normal LocalSystem 0	Sound Not Available
Windows Time W32Time Stopped Manual Share Process	Media Clip Not Available
c:\winnt\system32\services.exe Normal LocalSystem 0 World Wide Web Publishing Service W3SVC Running Auto	Image Document "C:\Program Files\Windows NT\Accessories\ImageVue\KodakImg.exe"
Share Process c:\winnt\system32\inetsrv\inetinfo.exe Normal	WordPad Document "%ProgramFiles%\Windows
LocalSystem 0	NT\Accessories\WORDPAD.EXE"
Windows Management Instrumentation WinMgmt Running Auto	Windows Media Services DRM Storage object Not Available
Own Process c:\winnt\system32\wbem\winmgmt.exe Ignore LocalSystem 0	Bitmap Image mspaint.exe
Windows Management Instrumentation Driver Extensions Wmi	[Internet Explorer 5]
Running Manual Share Process c:\winnt\system32\services.exe	
Normal LocalSystem 0	[ Following are sub-categories of this main category ]
[Program Groups]	[Summary]
Group Name	Item Value
Accessories Default User: Accessories Default User	Version 5.00.3315.1000
	Build 53315.1000
	1

Product ID51876-OEM-0000007-00000 rsapi32.dll <File Missing> Not Available Not Available Application Path C:\Program Files\Internet Explorer Not Available Not Available rsasig.dll <File Missing> Language English (United States) Not Available Not Available Active Printer Not Available Not Available Not Available schannel.dll 5.1.2195.0 138 KB 5/4/2001 11:05:02 AM Cipher Strength 168-bit C:\WINNT\system32 Microsoft Corporation Content Advisor Disabled shdoc401.dll <File Missing> Not Available Not IEAK Install Available Not Available Nο Not Available shdocvw.dll 5.0.3315.2879 1078 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation [File Versions] shell32.dll 5.0.3315.2902 2304 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation File Version Size Date Path Company advapi32.dll 5.0.2195.2867 352 KB 5/4/2001 11:05:02 AM shlwapi.dll5.0.3315.1000 283 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation 5.0.3103.1000 5/4/2001 11:05:02 AM 5.0.2920.0 82 KB 12/7/1999 7:00:00 AM advpack.dll 87 KB C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation urlmon.dll 5.0.3315.1000 browselc.dll 5.0.3315.2846 35 KB 5/4/2001 11:05:02 AM 441 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation browseui.dll 5.0.3315.2846 789 KB 5/4/2001 11:05:02 AM vbscript.dll 5.1.0.5907 428 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation ckcnv.exe 5.0.2189.1 9 KB 12/7/1999 7:00:00 AM webcheck.dll 5.0.3315.1000 252 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation win.com 5.0.2134.1 24 KB cometl32 dll 5.81.3103.1000 538 KB 5/4/2001 11:05:02 AM 12/7/1999 7:00:00 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation crypt32.dll 5.131.2195.2833 451 KB 5/4/2001 11:05:02 AM wininet.dll 5.0.3315.1000 457 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation enhsig.dll <File Missing> Not Available Not Available winsock.dll 3.10.0.103 3 KB 12/7/1999 7:00:00 AM Not Available C:\WINNT\system32 Microsoft Corporation Not Available 162 KB iemigrat.dll <File Missing> Not Available Not wintrust.dll 5.131.2195.2779 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation Available Not Available Not Available iesetup.dll 5.0.3103.1000 57 KB 5/4/2001 11:05:02 AM wsock.vxd <File Missing> Not Available Not Available C:\WINNT\system32 Microsoft Corporation Not Available Not Available iexplore.exe 5.0.2920.0 59 KB 12/7/1999 7:00:00 AM wsock32.dll 5.0.2195.2871 21 KB 5/4/2001 11:05:02 AM C:\Program Files\Internet Explorer Microsoft Corporation C:\WINNT\system32 Microsoft Corporation imagehlp.dll 5.0.2195.2778 126 KB 5/4/2001 11:05:02 AM wsock32n.dll <File Missing> Not Available Not C:\WINNT\system32 Microsoft Corporation Available Not Available Not Available imghelp.dll <File Missing> Not Available Not Available Not Available Not Available [Connectivity] inseng.dll 5.0.3103.1000 72 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation Item Value jobexec.dll 5.0.0.1 47 KB 12/7/1999 7:00:00 AM Connection Preference Never dial C:\WINNT\system32 Microsoft Corporation EnableHttp1.1 jscript.dll 5.1.0.5907 476 KB 5/4/2001 11:05:02 AM ProxyHttp1.1 0 C:\WINNT\system32 Microsoft Corporation jsproxy.dll 5.0.2920.0 13 KB 12/7/1999 7:00:00 AM LAN Settings C:\WINNT\system32 Microsoft Corporation msaahtml.dll <File Missing> Not Available Not AutoConfigProxy wininet.dll Available Not Available Not Available AutoProxyDetectMode Enabled mshtml.dll 5.0.3315.2870 2290 KB 5/4/2001 11:05:02 AM AutoConfigURL C:\WINNT\system32 Microsoft Corporation Proxy Disabled msjava.dll 5.0.3802.0 923 KB 5/4/2001 11:05:02 AM ProxyServer C:\WINNT\system32 Microsoft Corporation ProxyOverride msoss.dll <File Missing> Not Available Not Available Not Available Not Available [Cache] msxml.dll 8.0.5718.1 493 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation [ Following are sub-categories of this main category ] 5.0.3103.1000 86 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation [Summary] ole32.dll 5.0.2195.2887 970 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation Item Value oleaut32.dll 2.40.4517.0 612 KB 5/4/2001 11:05:02 AM Page Refresh Type Automatic C:\WINNT\system32 Microsoft Corporation Temporary Internet Files Folder C:\Documents and olepro32.dll 5.0.4517.0 160 KB 5/4/2001 11:05:02 AM Settings\Administrator\Local Settings\Temporary Internet Files C:\WINNT\system32 Microsoft Corporation Total Disk Space 8665 MB rsabase.dll 5.0.2195.2228 Available Disk Space 4500 MB 128 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation Maximum Cache Size 270 MB rsaenh.dll 5.0.2195.2228 131 KB 5/4/2001 11:05:02 AM Available Cache Size 271 MB C:\WINNT\system32 Microsoft Corporation

[List of Objects]	Auto-synchronizationEnabled
Program File Status CodeBase	ClusteringDisabled Unattended modeDisabled
No cached object information available	BIOS-compatibility mappingExtended
	Number of arrays1
[Content]	Number of logical drives1
	Number of hot-spare drives0
[ Following are sub-categories of this main category ]	Number of ready drives0
[Summary]	Array A
f 71	
Item Value	Array identifierA
Content Advisor Disabled	Array size in MB
[Personal Certificates]	Free space in MB9 Number of logical drives1
[Fersonal Certificates]	Stripe order (channel/device)1/0 1/1 1/2 1/3 1/4 1/5 1/6 2/8 2/9 2/10 2/11 2/12
Issued To Issued By Validity Signature Algorithm	2/13 2/14
Administrator Administrator 10/19/2001 to 9/25/2101	Number of physical drives14
sha1RSA	Logical drives in array A
[Other People Certificates]	
[	Logical drive1
Issued To Issued By Validity Signature Algorithm	Array letterA
No other people certificate information available	StateOkay
[Publishers]	RAID level0 Data space in MB121492
[1 uonsileis]	Parity space in MB0
Name	Date created10/26/01
No publisher information available	Write-cache modeWrite through
[Convitu]	Merge-group number207
[Security]	Merge-group stateNon-shared
Zone Security Level	
Local intranet Medium-low	Physical drives in array A
Trusted sites Low	
Internet Medium Restricted sites High	TypeHard disk drive Channel1
Restricted sites Trigit	SCSI ID0
	VendorIBM-PSG
Disk Controller Configuration Parameters	Product or model numberST39204L
	FRU part number19K1465 Serial number3BV04RP4
ServeRAID-4MX Controllers 1-5	Firmware level3283
	Size in MB8678
November 1, 2001 5:18:35 PM EST	StateOnline
	Array letterA PFA errorNo
Configuration summary	PFA ellolNo
	TypeHard disk drive
Server nametpcc-3way	Channel1
ServeRAID Manager agent4.80.24	SCSI ID1
ServeRAID Manager console4.80.24 Number of controllers5	VendorIBM-PSG Product or model numberST39204L
Operating systemWindows 2000	FRU part number19K1465
	Serial number3BV04LED
Information for controller 1	Firmware level3283
Controller typeServeRAID-4Mx	Size in MB8678 StateOnline
BIOS version4.80.24	Array letterA
Firmware version4.80.24	PFA errorNo
Device driver version4.80.24	T T T T T T T T T T T T T T T T T T T
Physical slot1	TypeHard disk drive Channel1
Battery-backup cacheInstalled Read-ahead cache modeAdaptive	SCSI ID2
Stripe-unit size64K	VendorIBM-PSG
Rebuild rateHigh	Product or model numberST39204L
Hot-swap rebuildEnabled	FRU part number19K1465
Data scrubbingEnabled	Serial number3BV04PKY
	•

Firmware level3283
Size in MB8678
StateOnline
Array letterA
PFA errorNo
Tra citor
TypeHard disk drive
Charmal 1
Channel1
SCSI ID3
VendorIBM-PSG
Product or model numberST39204L
FRU part number19K1465
Serial number3BV0ECNQ
Firmware level3283
Size in MB8678
StateOnline
Array letterA
PFA errorNo
TypeHard disk drive
Channel1
SCSI ID4
VendorIBM-PSG
Product or model numberST39204L
FRU part number19K1465
Serial number3BV04LB2
Firmware level3283
Size in MB8678
StateOnline
Array letterA
PFA errorNo
TTA CITOL
W 11.11.
TypeHard disk drive
Channel1
SCSI ID5
VendorIBM-PSG
VendorIBM-PSG Product or model numberST39204L
VendorIBM-PSG Product or model numberST39204L FRU part number19K1465
VendorIBM-PSG Product or model numberST39204L
VendorIBM-PSG Product or model numberST39204L FRU part number19K1465
VendorIBM-PSG Product or model numberST39204L FRU part number19K1465 Serial number3BV04SBB
VendorIBM-PSG Product or model numberST39204L FRU part number19K1465 Serial number3BV04SBB Firmware level3283
VendorIBM-PSG Product or model numberST39204L FRU part number19K1465 Serial number3BV04SBB Firmware level3283 Size in MB8678
VendorIBM-PSG Product or model numberST39204L FRU part number19K1465 Serial number3BV04SBB Firmware level3283 Size in MB8678 StateOnline Array letterA
Vendor
Vendor
VendorIBM-PSG Product or model numberST39204L FRU part number19K1465 Serial number3BV04SBB Firmware level3283 Size in MB8678 StateOnline Array letterA
Vendor

Array letter	A
PFA error	
Туре	Hard diele drive
Channel	
SCSI ID	
Vendor	
Product or model nu	mberST39204L
FRU part number	
Serial number	
Firmware level	
Size in MB	
State	
Array letter	
PFA error	No
Туре	Hard disk drive
Channel	
SCSI ID	
Vendor	
	mberST39204L
FRU part number	
Serial number	
Firmware level	
Size in MB	8678
State	Online
Array letter	
PFA error	
1171 01101	110
Т	TTI diI d
Type	
Channel	
SCSI ID	11
Vendor	IBM-PSG
Product or model nu	mberST39204L
FRU part number	
Serial number	
Firmware level	
Size in MB	
State	
Array letter	
PFA error	No
Туре	Hard disk drive
Channel	
SCSI ID	
Vendor	
	mberST39204L
FRU part number	
Serial number	3BV04PA9
Firmware level	3283
Size in MB	8678
State	Online
Array letter	
PFA error	
1171 01101	110
T	TT 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Type	
Channel	
SCSI ID	13
Vendor	IBM-PSG
	mberST39204L
FRU part number	19K 1/165
Serial number	
Firmware level	
Size in MB	
State	Online
A 1	
Array letter	A
Array letter PFA error	
•	

TypeHard disk drive	TypeHard disk drive
Channel2	Channel1
SCSI ID14	SCSI ID4
VendorIBM-PSG	VendorIBM-PSG
Product or model numberST39204L	Product or model numberST39204L
FRU part number19K1465	FRU part number19K1465
Serial number3BV04SW3	Serial number3BV04LB2
Firmware level3283	Firmware level3283
Size in MB8678	Size in MB8678
StateOnline	StateOnline
Array letterA	Array letterA
PFA errorNo	PFA errorNo
	TypeHard disk drive
SCSI channel 1	Channel1
	SCSI ID5
TypeHard disk drive	VendorIBM-PSG
Channel1	Product or model numberST39204L
SCSI ID0	FRU part number19K1465
VendorIBM-PSG	Serial number3BV04SBB
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV04RP4	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
Array letterA	TypeHard disk drive
PFA errorNo	Channel1
TTA CHOL	
	SCSI ID6
TypeHard disk drive	VendorIBM-PSG
Channel1	Product or model numberST39204L
SCSI ID1	FRU part number19K1465
VendorIBM-PSG	Serial number3BV0EBFC
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV04LED	
	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
Array letterA	TypeEnclosure
PFA errorNo	Channel1
	SCSI ID15
TypeHard disk drive	Enclosure statusOkay
Channel1	Fan 1 statusOkay
SCSI ID2	
	Fan 2 statusOkay
VendorIBM-PSG	Power supply 1 statusOkay
Product or model numberST39204L	Power supply 2 statusOkay
FRU part number19K1465	Temperature statusNormal
Serial number3BV04PKY	Enclosure ID
Firmware level3283	VendorIBM
Size in MB8678	Product or model numberEXP300
StateOnline	Serial number1K2765
Array letterA	Firmware levelD014
7	
PFA errorNo	TDYY:
	FRU type
TypeHard disk drive	FRU vendor
Channel1	FRU date of manufacture
SCSI ID3	FRU part number°
	*
VendorIBM-PSG	FRU serial number
Product or model numberST39204L	
FRU part number19K1465	FRU typeCARD
Serial number3BV0ECNQ	FRU vendorIBM
Firmware level3283	FRU date of manufacture05/2000
Size in MB8678	FRU part number07K7027
StateOnline	FRU serial number1R023053080
Array letterA	
7	
PFA errorNo	FRU type
	FRU vendor

FRU date of manufacture	Product or model numberST39204L
FRU part numberÀ	FRU part number19K1465
FRU serial number	Serial number3BV04PHB
TDYY .	Firmware level3283
FRU type	Size in MB8678
FRU vendor	StateOnline
FRU date of manufacture	Array letterA
FRU part number	PFA errorNo
FRU serial number	
	TypeHard disk drive
EDIT 6 CARD	
FRU typeCARD	Channel2
FRU vendorIBM	SCSI ID12
FRU date of manufacture04/2000	VendorIBM-PSG
FRU part number0	Product or model numberST39204L
K7038	FRU part number19K1465
FRU serial number1R02204+`06	Serial number3BV04PA9
	Firmware level3283
FRU typeCARD	Size in MB8678
FRU vendorIBM	StateOnline
FRU date of manufacture05/2000	Array letterA
FRU part number07K7048	PFA errorNo
FRU serial number1R024052167	
	TypeHard disk drive
SCSI channel 2	Channel2
	SCSI ID13
TypeHard disk drive	VendorIBM-PSG
Channel2	Product or model numberST39204L
SCSI ID8	FRU part number19K1465
VendorIBM-PSG	Serial number3BV0EBZ0
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV0ECE2	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	1171 01101110
	TypeHard disk drive
Array letterA	I Type Hard disk drive
·	CI 1
PFA errorNo	Channel2
PFA errorNo	Channel2 SCSI ID14
·	Channel2
PFA errorNo	Channel2 SCSI ID14
PFA errorNo  TypeHard disk drive Channel2	Channel
PFA errorNo         TypeHard disk drive         Channel	Channel
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3
PFA errorNo         TypeHard disk drive         Channel2         SCSI ID9         VendorIBM-PSG         Product or model numberST39204L	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3         Firmware level       3283
PFA errorNo         TypeHard disk drive         Channel2         SCSI ID9         VendorIBM-PSG         Product or model numberST39204L         FRU part number19K1465	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3         Firmware level       3283         Size in MB       8678
PFA error	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3         Firmware level       3283         Size in MB       8678         State       Online
PFA errorNo         TypeHard disk drive         Channel2         SCSI ID9         VendorIBM-PSG         Product or model numberST39204L         FRU part number19K1465	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3         Firmware level       3283         Size in MB       8678
PFA error	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3         Firmware level       3283         Size in MB       8678         State       Online
PFA error	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A
PFA error	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No
PFA error	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Enclosure
PFA error	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SW3           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       38V04P9D         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Enclosure         Channel       2         SCSI ID       15
PFA error	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       32804SW3         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Enclosure         Channel       2         SCSI ID       15         Enclosure status       Okay
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       38V04P9D         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K 1465           Serial number         3BV04SW3           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Enclosure         Channel       2         SCSI ID       15         Enclosure status       Okay         Fan 1 status       Okay         Fan 2 status       Okay
PFA error         No           Type         Hard disk drive           Channel         2           SCSI ID         9           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV044P9D           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         2           SCSI ID         10           Vendor         IBM-PSG	Channel
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10	Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SW3         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Enclosure         Channel       2         SCSI ID       15         Enclosure status       Okay         Fan 1 status       Okay         Fan 2 status       Okay
PFA error         No           Type         Hard disk drive           Channel         2           SCSI ID         9           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV044P9D           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         2           SCSI ID         10           Vendor         IBM-PSG	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SW3           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04P9D         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         APFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SW3           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Temperature status         Normal
PFA error	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Fan 2 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Temperature status         Normal           Enclosure ID         0
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       38W04P9D         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SES         Firmware level       3283	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Temperature status         Normal           Enclosure ID         0           Vendor         IBM
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04P9D         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SES         Firmware level       3283         Size in MB       8678	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Power supply 2 status         Normal           Enclosure ID         0           Vendor         IBM           Product or model number         EXP300
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04P9D         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SES         Firmware level       3283         Size in MB       8678         State       Online	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Power supply 2 status         Normal           Enclosure ID         0           Vendor         IBM           Product or model number         EXP300           Serial number         1K2765
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04P9D         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SES         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Power supply 2 status         Normal           Enclosure ID         0           Vendor         IBM           Product or model number         EXP300           Serial number         1K2765           Firmware level         D014
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04P9D         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SES         Firmware level       3283         Size in MB       8678         State       Online	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Temperature status         Normal           Enclosure ID         0           Vendor         IBM           Product or model number         EXP300           Serial number         1K2765           Firmware level         D014
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SES         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         32804SW3           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Temperature status         Normal           Enclosure ID         0           Vendor         IBM           Product or model number         EXP300           Serial number         1K2765           Firmware level         D014           FRU type
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04P9D         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SES         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Temperature status         Normal           Enclosure ID         0           Vendor         IBM           Product or model number         EXP300           Serial number         1K2765           Firmware level         D014
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SES         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         32804SW3           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Temperature status         Normal           Enclosure ID         0           Vendor         IBM           Product or model number         EXP300           Serial number         1K2765           Firmware level         D014           FRU type
PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       9         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       10         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SES         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SW3           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           APFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Power supply 2 status         Normal           Enclosure ID         0           Vendor         IBM           Product or model number         EXP300           Serial number         1K2765           Firmware level         D014           FRU type         FRU vendor           FRU date of manufacture
PFA error         No           Type         Hard disk drive           Channel         2           SCSI ID         9           Vendor         IBM-PSG           Product or model number        ST39204L           FRU part number        19K1465           Serial number        3BV04P9D           Firmware level        3283           Size in MB        8678           State        Online           Array letter        A           PFA error        No           Type        Hard disk drive           Channel        2           SCSI ID        10           Vendor        IBM-PSG           Product or model number	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SW3           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           APFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Power supply 2 status         Normal           Enclosure ID         0           Vendor         IBM           Product or model number         EXP300           Serial number         1K2765           Firmware level         D014           FRU type         FRU vendor           FRU date of manufacture         FRU part number
PFA error         No           Type         Hard disk drive           Channel         2           SCSI ID         9           Vendor         IBM-PSG           Product or model number        ST39204L           FRU part number        19K1465           Serial number        38V04P9D           Firmware level        3283           Size in MB        8678           State        Online           Array letter        A           PFA error        No           Type        Hard disk drive           Channel        2           SCSI ID        10           Vendor        IBM-PSG           Product or model number	Channel         2           SCSI ID         14           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SW3           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           APFA error         No           Type         Enclosure           Channel         2           SCSI ID         15           Enclosure status         Okay           Fan 1 status         Okay           Power supply 1 status         Okay           Power supply 2 status         Okay           Power supply 2 status         Normal           Enclosure ID         0           Vendor         IBM           Product or model number         EXP300           Serial number         1K2765           Firmware level         D014           FRU type         FRU vendor           FRU date of manufacture

	Logical drives in array A
FRU typeCARD	
FRU vendorIBM	Logical drive1
FRU date of manufacture05/2000	Array letterA
FRU part number07K7027	StateOkay
FRU serial number1R023053078	RAID level0
	Data space in MB121492
FRU type	Parity space in MB0
FRU vendor	Date created10/26/01
FRU date of manufacture	Write-cache modeWrite through
FRU part numberÅ	Merge-group number207
FRU serial number	Merge-group stateNon-shared
EDII tura	
FRU typeFRU vendor	Physical drives in array A
FRU date of manufacture	
FRU part number	TypeHard disk drive
FRU serial number	Channel1
	SCSI ID0
FRU typeCARD	VendorIBM-PSG
FRU vendorIBM	Product or model numberST39204L
FRU date of manufacture04/2000	FRU part number19K1465
FRU part number0	Serial number3BV04KA1
K7038	Firmware level3283
FRU serial number1R02204+`06	Size in MB8678
	StateOnline
FRU typeCARD	Array letterA
FRU vendorIBM	PFA errorNo
FRU date of manufacture05/2000	
FRU part number07K7048	TypeHard disk drive
FRU serial number1R024052167	Channel 1
	SCSI ID1
F. J 64h 6 i f 11 - 1	VendorIBM-PSG
End of the configuration information for controller 1	Product or model numberST39204L
	FRU part number19K1465 Serial number3BV04RZJ
Information for controller 2	Firmware level3283
	Size in MB8678
Controller typeServeRAID-4Mx	StateOnline
BIOS version4.80.24	Array letterA
Firmware version4.80.24	PFA errorNo
Device driver version4.80.24	
Physical slot2	TypeHard disk drive
Battery-backup cacheInstalled	Channel1
Read-ahead cache modeAdaptive	SCSI ID2
Stripe-unit size64K	VendorIBM-PSG
Rebuild rateHigh	Product or model numberST39204L
Hot-swap rebuildEnabled	FRU part number19K1465
Data scrubbingEnabled	Serial number3BV0DW8K
Auto-synchronizationEnabled	Firmware level3283
ClusteringDisabled	Size in MB8678
Unattended modeDisabled	StateOnline
BIOS-compatibility mappingExtended	Array letterA
Number of arrays	PFA errorNo
Number of logical drives1 Number of hot-spare drives0	TypeHard disk drive
Number of ready drives0	Channel1
runiber of ready drives	SCSI ID3
Array A	VendorIBM-PSG
	Product or model numberST39204L
Array identifierA	FRU part number19K1465
Array size in MB121501	Serial number3BV04PZY
Free space in MB9	Firmware level3283
Number of logical drives1	Size in MB8678
Stripe order (channel/device)1/0 1/1 1/2 1/3 1/4 1/5 1/6 2/8 2/9 2/10 2/11 2/12	StateOnline
2/13 2/14	Array letterA
Number of physical drives14	PFA errorNo

TypeHard disk drive	VendorIBM-PSG
Channel1	Product or model numberST39204L
SCSI ID4	FRU part number19K1465
VendorIBM-PSG	Serial number3BV04SEV
Product or model numberST39204L	Firmware level3283
	Size in MB8678
FRU part number19K1465	
Serial number3BV04RPQ	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
Array letterA	TypeHard disk drive
PFA errorNo	Channel2
	SCSI ID11
TypeHard disk drive	VendorIBM-PSG
Channel1	Product or model numberST39204L
SCSI ID5	FRU part number19K1465
VendorIBM-PSG	Serial number3BV0ECCZ
Product or model numberST39204L	Firmware level3283
	Size in MB8678
FRU part number19K1465	
Serial number3BV04Q3Y	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
Array letterA	TypeHard disk drive
PFA errorNo	Channel2
	SCSI ID12
TypeHard disk drive	VendorIBM-PSG
Channel1	Product or model numberST39204L
SCSI ID6	FRU part number19K1465
VendorIBM-PSG	Serial number3BV0EC0N
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV0EBFT	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
StateOnline Array letterA	TypeHard disk drive
Array letterA	Channel2
Array letterA PFA errorNo	Channel
Array letterA PFA errorNo  TypeHard disk drive	Channel         2           SCSI ID         13           Vendor         IBM-PSG
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L
Array letter	Channel
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV0EBNT
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV0EBNT         Firmware level       3283
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV0EBNT         Firmware level       3283         Size in MB       8678
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV0EBNT         Firmware level       3283         Size in MB       8678         State       Online
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV0EBNT         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV0EBNT         Firmware level       3283         Size in MB       8678         State       Online
Array letter	Channel       2         SCSI ID
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV0EBNT         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A
Array letter	Channel       2         SCSI ID
Array letter	Channel         2           SCSI ID
Array letter	Channel       2         SCSI ID
Array letter	Channel       2         SCSI ID
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L
Array letter	Channel       2         SCSI ID
Array letter	Channel       2         SCSI ID
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SV8         Firmware level       3283
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SV8         Firmware level       3283         Size in MB       8678
Array letter	Channel         2           SCSI ID
Array letter	Channel       2         SCSI ID       13         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SV8         Firmware level       3283         Size in MB       8678
Array letter	Channel         2           SCSI ID
Array letter	Channel         2           SCSI ID
Array letter	Channel         2           SCSI ID
Array letter	Channel         2           SCSI ID
Array letter	Channel         2           SCSI ID
Array letter	Channel         2           SCSI ID
Array letter	Channel         2           SCSI ID
Array letter	Channel         2           SCSI ID
Array letter	Channel         2           SCSI ID

VendorIBM-PSG	Serial number3BV04Q3Y
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV04KA1	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	PFA ellolNo
	Tyma Hand digly drives
Array letterA	TypeHard disk drive
PFA errorNo	Channel1
	SCSI ID6
TypeHard disk drive	VendorIBM-PSG
Channel1	Product or model numberST39204L
SCSI ID1	FRU part number19K1465
VendorIBM-PSG	Serial number3BV0EBFT
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV04RZJ	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	1171 01101
Array letterA	TypeEnclosure
PFA errorNo	Channel 1
m vv 1 ** 1 **	SCSI ID15
TypeHard disk drive	Enclosure statusOkay
Channel1	Fan 1 statusOkay
SCSI ID2	Fan 2 statusOkay
VendorIBM-PSG	Power supply 1 statusOkay
Product or model numberST39204L	Power supply 2 statusOkay
FRU part number19K1465	Temperature statusNormal
Serial number3BV0DW8K	Enclosure ID0
Firmware level3283	VendorIBM
Size in MB8678	Product or model numberEXP300
StateOnline	Firmware levelD014
Array letterA	
PFA errorNo	FRU type
FFA CHOLNO	
T	FRU vendor
TypeHard disk drive	FRU date of manufacture
Channel1	FRU part number
SCSI ID3	FRU serial number
VendorIBM-PSG	
Product or model numberST39204L	FRU typeCARD
FRU part number19K1465	FRU vendorIBM
Serial number3BV04PZY	FRU date of manufacture05/2000
Firmware level3283	FRU part number07K7027
Size in MB8678	FRU serial number1R023052036
StateOnline	
Array letterA	FRU type
PFA errorNo	FRU vendor
	FRU date of manufacture
TypeHard disk drive	FRU part numberÀ
Channel1	FRU serial number
SCSI ID4	
VendorIBM-PSG	FRU typePower
Product or model numberST39204L	FRU vendorIBM
FRU part number19K1465	FRU date of manufacture04/2000
Serial number3BV04RPQ	FRU part number07K5657
Firmware level3283	FRU serial number1R0K204K054
Size in MB8678	
StateOnline	FRU type
Array letterA	FRU vendor
PFA errorNo	FRU date of manufacture
	FRU part number0
TypeHard disk drive	FRU serial number
Channel1	
SCSI ID5	FRU typeCARD
VendorIBM-PSG	
	FRU vendorIBM
Product or model numberST392041	
Product or model numberST39204L FRU part number19K1465	FRU vendor1BM FRU date of manufacture05/2000 FRU part number07K7048

FRU serial number1R024052162	Tona Hand diele Juine
SCSI channel 2	TypeHard disk drive Channel2
	SCSI ID13
TypeHard disk drive	VendorIBM-PSG
Channel2	Product or model numberST39204L
SCSI ID8	FRU part number19K1465
VendorIBM-PSG	Serial number3BV0EBNT
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV04Q0L	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
	Type Hard diele drive
Array letterA	TypeHard disk drive
PFA errorNo	Channel2
	SCSI ID14
TypeHard disk drive	VendorIBM-PSG
Channel2	Product or model numberST39204L
SCSI ID9	FRU part number19K1465
VendorIBM-PSG	Serial number3BV04SV8
Product or model numberST39204L	Firmware level
FRU part number19K1465	Size in MB8678
Serial number1BV03035	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
Array letterA	TypeEnclosure
PFA errorNo	Channel2
1174 (1101110	SCSI ID15
T	
TypeHard disk drive	Enclosure statusOkay
Channel2	Fan 1 statusOkay
SCSI ID10	Fan 2 statusOkay
VendorIBM-PSG	Power supply 1 statusOkay
Product or model numberST39204L	Power supply 2 statusOkay
FRU part number19K1465	Temperature statusNormal
Serial number3BV04SEV	Enclosure ID0
Firmware level	VendorIBM
Size in MB8678	Product or model numberEXP300
StateOnline	Firmware levelD014
Array letterA	
PFA errorNo	FRU type
	FRU vendor
TypeHard disk drive	FRU date of manufacture
Channel2	FRU part number
SCSI ID11	FRU serial number
VendorIBM-PSG	
Product or model numberST39204L	FRU typeCARD
FRU part number19K1465	FRU vendorIBM
Serial number3BV0ECCZ	FRU date of manufacture05/2000
Firmware level3283	FRU part number07K7027
Size in MB8678	FRU serial number1R023052037
StateOnline	
Array letterA	FRU type
PFA errorNo	FRU vendor
	FRU date of manufacture
TypeHard disk drive	FRU part numberÀ
	•
Channel2	FRU serial number
SCSI ID12	
VendorIBM-PSG	FRU typePower
Product or model numberST39204L	FRU vendorIBM
FRU part number19K1465	FRU date of manufacture04/2000
Serial number3BV0EC0N	FRU part number07K5657
Firmware level3283	FRU serial number1R0K204K054
Size in MB8678	
StateOnline	FRU type
Array letterA	FRU vendor
· ·	
PFA errorNo	FRU date of manufacture

FRU part number0	Firmware level3283
FRU serial number	Size in MB8678
	StateOnline
FRU typeCARD	Array letterA
FRU vendorIBM	PFA errorNo
FRU date of manufacture05/2000	
FRU part number07K7048	Type Hard diek drive
	TypeHard disk drive
FRU serial number1R024052162	Channel1
	SCSI ID1
	VendorIBM-PSG
End of the configuration information for controller 2	Product or model numberST39204L
	FRU part number19K1465
	Serial number3BV04S5M
Information for controller 3	Firmware level3283
	Size in MB8678
	StateOnline
Controller typeServeRAID-4Mx	
BIOS version4.80.24	Array letterA
Firmware version4.80.24	PFA errorNo
Device driver version4.80.24	
Physical slot3	TypeHard disk drive
Battery-backup cacheInstalled	Channel1
Read-ahead cache modeAdaptive	SCSI ID2
Stripe-unit size64K	VendorIBM-PSG
Rebuild rateHigh	Product or model numberST39204L
Hot-swap rebuildEnabled	FRU part number19K1465
Data scrubbingEnabled	Serial number3BV04L7D
Auto-synchronizationEnabled	Firmware level3283
ClusteringDisabled	Size in MB8678
Unattended mode	StateOnline
BIOS-compatibility mappingExtended	Array letterA
Number of arrays1	PFA errorNo
Number of logical drives1	
	Tyma Hand diele deises
Number of hot-spare drives0	TypeHard disk drive
Number of ready drives0	Channel1
	SCSI ID3
A Prox. A	VendorIBM-PSG
Array A	
	Product or model numberST39204L
· ·	Product or model numberST39204L FRU part number19K1465
Array identifierA	Product or model numberST39204L
Array identifier	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SG8
Array identifier	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SG8 Firmware level3283
Array identifier	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SG8 Firmware level3283 Size in MB8678
Array identifier	Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SG8         Firmware level       3283         Size in MB       8678         State       Online
Array identifier	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SG8 Firmware level3283 Size in MB8678
Array identifier	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SG8 Firmware level3283 Size in MB8678 StateOnline Array letterA
Array identifier	Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SG8         Firmware level       3283         Size in MB       8678         State       Online
Array identifier	Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SG8         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No
Array identifier	Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SG8         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1
Array identifier	Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SG8         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SY0
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SY0           Firmware level         3283
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SY0           Firmware level         3283           Size in MB         8678
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SY0           Firmware level         3283           Size in MB         8678           State         Online
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SY0           Firmware level         3283           Size in MB         8678
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SY0           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SY0           Firmware level         3283           Size in MB         8678           State         Online
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         5
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         5
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         5           Vendor         IBM-PSG
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         5           Vendor         IBM-PSG           Product or model number         ST39204L
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           APFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         5           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           A PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         5           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SRV
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           A PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         5           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SRV
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           A PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         5           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SRV           Firmware level         3283
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           A PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         5           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         38V04SRV           Firmware level         3283           Size in MB         8678
Array identifier	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SG8           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         4           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           A PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         5           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SRV           Firmware level         3283

Array letterA	TypeHard disk drive
PFA errorNo	Channel2
	SCSI ID12
TypeHard disk drive	VendorIBM-PSG
Channel1	Product or model numberST39204L
SCSI ID6	
	FRU part number19K1465
VendorIBM-PSG	Serial number3BV04Q04
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV04PJE	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
Array letterA	TypeHard disk drive
PFA errorNo	Channel 2
TTA CHOL	
W 11:11:	SCSI ID13
TypeHard disk drive	VendorIBM-PSG
Channel2	Product or model numberST39204L
SCSI ID8	FRU part number19K1465
VendorIBM-PSG	Serial number3BV04SLH
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV04STA	StateOnline
Firmware level	Array letterA
Size in MB8678	•
	PFA errorNo
StateOnline	
Array letterA	TypeHard disk drive
PFA errorNo	Channel2
	SCSI ID14
TypeHard disk drive	VendorIBM-PSG
Channel2	Product or model numberST39204L
SCSI ID9	FRU part number19K1465
VendorIBM-PSG	Serial number3BV0E54T
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV04S2N	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
Array letterA	
PFA errorNo	SCSI channel 1
TypeHard disk drive	TypeHard disk drive
Channel2	Channel1
SCSI ID10	SCSI ID0
VendorIBM-PSG	VendorIBM-PSG
Product or model numberST39204L	Product or model numberST39204L
FRU part number19K1465	FRU part number19K1465
Serial number3BV04RNL	Serial number3BV04SE4
Firmware level3283	Firmware level3283
Size in MB8678	Size in MB8678
StateOnline	StateOnline
Array letterA	Array letterA
PFA errorNo	PFA errorNo
FFA CHOLNO	FFA CHOLNO
W 11:11:	m vv 1 11 1 1 1
TypeHard disk drive	TypeHard disk drive
Channel2	Channel1
SCSI ID11	SCSI ID1
VendorIBM-PSG	VendorIBM-PSG
Product or model numberST39204L	Product or model numberST39204L
FRU part number19K1465	FRU part number19K1465
Serial number3BV04Q32	Serial number3BV04S5M
Firmware level 3283	Firmware level3283
Size in MB8678	Size in MB8678
StateOnline	StateOnline
Array letterA	Array letterA
PFA errorNo	PFA errorNo

TypeHard disk drive	Enclosure statusOkay
Channel1	Fan 1 statusOkay
SCSI ID2	Fan 2 statusOkay
VendorIBM-PSG	Power supply 1 statusOkay
Product or model numberST39204L	Power supply 2 statusOkay
FRU part number19K1465	Temperature statusNormal
	=
Serial number3BV04L7D	Enclosure ID0
Firmware level3283	VendorIBM
Size in MB8678	Product or model numberEXP300
StateOnline	Serial number`
Array letterA	Firmware levelD014
PFA errorNo	
	FRU type
TypeHard disk drive	FRU vendor
Channel1	FRU date of manufacture
SCSI ID3	FRU part number
VendorIBM-PSG	FRU serial number
Product or model numberST39204L	
FRU part number19K1465	FRU typeCARD
Serial number3BV04SG8	FRU vendorIBM
Firmware level3283	FRU date of manufacture05/2000
Size in MB8678	FRU part number07K7027
	=
StateOnline	FRU serial number1R023053111
Array letterA	
PFA errorNo	FRU type
	FRU vendor
TypeHard disk drive	FRU date of manufacture
Channel1	FRU part number°
SCSI ID4	FRU serial number
VendorIBM-PSG	
Product or model numberST39204L	FRU type
FRU part number19K1465	FRU vendor
Serial number3BV04SY0	FRU date of manufacture
Firmware level3283	FRU part number
Size in MB8678	FRU serial number
StateOnline	
Array letterA	FRU typeCARD
PFA errorNo	FRU vendorIBM
	FRU date of manufacture05/2000
TypeHard disk drive	FRU part number07!70?8
Channel1	FRU serial number1R02!05"1?
SCSI ID5	
VendorIBM-PSG	FRU typeCARD
Product or model numberST39204L	FRU vendorIBM
FRU part number19K1465	FRU date of manufacture05/2000
Serial number3BV04SRV	FRU part number07K7048
Firmware level3283	FRU serial number1R024053192
Size in MB8678	
StateOnline	SCSI channel 2
Array letterA	
PFA errorNo	TypeHard disk drive
***************************************	Channel2
TypeHard disk drive	SCSI ID8
Channel1	VendorIBM-PSG
SCSI ID6	Product or model numberST39204L
VendorIBM-PSG	FRU part number19K1465
Product or model numberST39204L	Serial number3BV04STA
FRU part number19K1465	Firmware level3283
Serial number3BV04PJE	Size in MB8678
Firmware level3283	StateOnline
Size in MB8678	Array letterA
StateOnline	PFA errorNo
Array letterA	
PFA errorNo	TypeHard disk drive
	Channel2
TypeEnclosure	SCSI ID9
Channel1	VendorIBM-PSG
SCSI ID	Product or model numberST39204L
00011010	1 Todaet of model number513/204L
	-

FRU part number19K1465	Size in MB8678
Serial number3BV04S2N	StateOnline
Firmware level	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
Array letterA	TypeEnclosure
PFA errorNo	Channel2
	SCSI ID15
TypeHard disk drive	Enclosure statusOkay
Channel2	,
	Fan 1 statusOkay
SCSI ID10	Fan 2 statusOkay
VendorIBM-PSG	Power supply 1 statusOkay
Product or model numberST39204L	Power supply 2 statusOkay
FRU part number19K1465	Temperature statusNormal
Serial number3BV04RNL	Enclosure ID0
Firmware level3283	VendorIBM
Size in MB	Product or model numberEXP300
StateOnline	Serial number
Array letterA	Firmware levelD014
PFA errorNo	
	FRU type
TypeHard disk drive	FRU vendor
Channel2	FRU date of manufacture
SCSI ID11	FRU part number
VendorIBM-PSG	FRU serial number
Product or model numberST39204L	
FRU part number19K1465	FRU typeCARD
Serial number3BV04Q32	FRU vendorIBM
Firmware level3283	FRU date of manufacture05/2000
Size in MB8678	FRU part number07K7027
StateOnline	FRU serial number1R023053112
Array letterA	
•	
PFA errorNo	FRU type
	FRU vendor
TypeHard disk drive	FRU date of manufacture
Channel2	FRU part number
SCSI ID12	FRU serial number
VendorIBM-PSG	
Product or model numberST39204L	
	FRU type
FRU part number19K1465	FRU vendor
Serial number3BV04Q04	FRU date of manufacture
Firmware level3283	FRU part number
Size in MB8678	FRU serial number
StateOnline	
Array letterA	FRU typeCARD
PFA errorNo	FRU vendorIBM
1171 0110110	FRU date of manufacture05/2000
T	
TypeHard disk drive	FRU part number07!70?8
Channel2	FRU serial number1R02!05"1?
SCSI ID13	
VendorIBM-PSG	FRU typeCARD
Product or model numberST39204L	FRU vendorIBM
FRU part number19K1465	FRU date of manufacture05/2000
Serial number3BV04SLH	FRU part number07K7048
Firmware level3283	FRU serial number1R024053192
	FRO Seriai numberTR024033192
Size in MB8678	
StateOnline	
Array letterA	End of the configuration information for controller 3
PFA errorNo	
TypeHard disk drive	Information for controller 4
Channel2	
SCSI ID14	Controller typeServeRAID-4Mx
VendorIBM-PSG	BIOS version4.80.24
Product or model numberST39204L	Firmware version4.80.24
FRU part number19K1465	Device driver version4.80.24
Serial number3BV0E54T	Physical slot4
Firmware level3283	Battery-backup cacheInstalled
	•

	-
Read-ahead cache modeAdaptive	SCSI ID2
•	VendorIBM-PSG
Stripe-unit size64K	
Rebuild rateHigh	Product or model numberST39204L
Hot-swap rebuildEnabled	FRU part number19K1465
	Serial number3BV04SSP
Data scrubbingEnabled	Serial Hullioe1
Auto-synchronizationEnabled	Firmware level3283
ClusteringDisabled	Size in MB8678
•	
Unattended modeDisabled	StateOnline
BIOS-compatibility mappingExtended	Array letterA
Number of arrays1	PFA errorNo
	TTA CHOL
Number of logical drives1	
Number of hot-spare drives0	TypeHard disk drive
Number of ready drives0	Channel1
Number of ready drives	
	SCSI ID3
Array A	VendorIBM-PSG
	Product or model numberST39204L
Array identifierA	FRU part number19K1465
Array size in MB121501	Serial number3BV04KV4
Free space in MB9	Firmware level3283
Number of logical drives1	Size in MB8678
Stripe order (channel/device)1/0 1/1 1/2 1/3 1/4 1/5 1/6 2/8 2/9 2/10 2/11 2/12	StateOnline
2/13 2/14	Array letterA
Number of physical drives14	PFA errorNo
rumoer or physical arresumm.	1111 01101
Logical drives in array A	TypeHard disk drive
	Channel1
Logical drive1	SCSI ID4
Array letterA	VendorIBM-PSG
	Product or model numberST39204L
StateOkay	
RAID level0	FRU part number19K1465
Data space in MB121492	Serial number3BV04Q5F
Parity space in MB0	Firmware level3283
Date created10/26/01	Size in MB8678
Write-cache modeWrite through	StateOnline
Write eache mode	
Merge-group number207	Array letterA
Merge-group number207	Array letterA
Merge-group number207	Array letterA PFA errorNo
Merge-group number207 Merge-group stateNon-shared	Array letterA
Merge-group number207 Merge-group stateNon-shared	Array letterA PFA errorNo TypeHard disk drive
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A	Array letter
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A	Array letter
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A	Array letter
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A  TypeHard disk drive	Array letter
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A  TypeHard disk drive Channel1	Array letter
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A  TypeHard disk drive Channel1 SCSI ID0	Array letter
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A  TypeHard disk drive Channel1	Array letter
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A  TypeHard disk drive Channel1 SCSI ID0 Vendor1BM-PSG	Array letter
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A  TypeHard disk drive Channel1 SCSI ID0 VendorBM-PSG Product or model numberST39204L	Array letter
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A   TypeHard disk drive Channel1 SCSI ID0 VendorIBM-PSG Product or model numberST39204L FRU part number19K1465	Array letter
Merge-group number207 Merge-group stateNon-shared  Physical drives in array A  TypeHard disk drive Channel1 SCSI ID0 VendorBM-PSG Product or model numberST39204L	Array letter
Merge-group number	Array letter
Merge-group number         207           Merge-group state         Non-shared           Physical drives in array A	Array letter
Merge-group number         207           Merge-group state         Non-shared           Physical drives in array A	Array letter
Merge-group number         207           Merge-group state         Non-shared           Physical drives in array A	Array letter
Merge-group number	Array letter
Merge-group number         207           Merge-group state         Non-shared           Physical drives in array A	Array letter
Merge-group number	Array letter

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FRU part number19K1465	Size in MB8678
Serial number3BV04S4J	StateOnline
Firmware level3283	Array letterA
Size in MB8678	PFA errorNo
StateOnline	
Array letterA	TypeHard disk drive
PFA errorNo	Channel2
TTA CHOL	SCSI ID14
T	
TypeHard disk drive	VendorIBM-PSG
Channel2	Product or model numberST39204L
SCSI ID9	FRU part number19K1465
VendorIBM-PSG	Serial number3BV04RTF
Product or model numberST39204L	Firmware level3283
FRU part number19K1465	Size in MB8678
Serial number3BV04Q1B	StateOnline
Firmware level3283	Array letterA
Size in MB	PFA errorNo
StateOnline	1171 01101
Array letterA	acar 1 11
PFA errorNo	SCSI channel 1
TypeHard disk drive	TypeHard disk drive
Channel2	Channel1
SCSI ID10	SCSI ID0
VendorIBM-PSG	VendorIBM-PSG
Product or model numberST39204L	Product or model numberST39204L
FRU part number19K1465	FRU part number19K1465
Serial number3BV04SLQ	Serial number3BV04SHM
Firmware level3283	Firmware level 3283
Size in MB8678	Size in MB8678
StateOnline	StateOnline
Array letterA	Array letterA
PFA errorNo	PFA errorNo
TypeHard disk drive	TypeHard disk drive
Channel2	Channel1
SCSI ID11	SCSI ID1
VendorIBM-PSG	
	Vendor IBM-PSG
	VendorIBM-PSG
Product or model numberST39204L	Product or model numberST39204L
Product or model numberST39204L FRU part number19K1465	Product or model numberST39204L FRU part number19K1465
Product or model numberST39204L FRU part number19K1465 Serial number3BV04PLX	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SSB
Product or model numberST39204L FRU part number19K1465 Serial number3BV04PLX Firmware level3283	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SSB Firmware level3283
Product or model numberST39204L FRU part number19K1465 Serial number3BV04PLX	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SSB Firmware level3283 Size in MB8678
Product or model numberST39204L FRU part number19K1465 Serial number3BV04PLX Firmware level3283	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SSB Firmware level3283
Product or model numberST39204L FRU part number19K1465 Serial number3BV04PLX Firmware level3283 Size in MB8678	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SSB Firmware level3283 Size in MB8678
Product or model numberST39204L FRU part number19K1465 Serial number3BV04PLX Firmware level3283 Size in MB8678 StateOnline	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online
Product or model numberST39204L FRU part number19K1465 Serial number3BV04PLX Firmware level3283 Size in MB8678 StateOnline Array letterA	Product or model numberST39204L FRU part number19K1465 Serial number3BV04SSB Firmware level3283 Size in MB8678 StateOnline Array letterA
Product or model numberST39204L FRU part number19K1465 Serial number3BV04PLX Firmware level3283 Size in MB8678 StateOnline Array letterA PFA errorNo	Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04SSB         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No
Product or model number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive
Product or model numberST39204L FRU part number19K1465 Serial number3BV04PLX Firmware level3283 Size in MB8678 StateOnline Array letterA PFA errorNo  TypeHard disk drive Channel2	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1
Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04PLX         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       12	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2
Product or model number       ST39204L         FRU part number       19K1465         Serial number       3BV04PLX         Firmware level       3283         Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       12         Vendor       IBM-PSG	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG
Product or model number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L
Product or model number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465
Product or model number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L
Product or model number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465
Product or model number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSP
Product or model number      ST39204L         FRU part number      19K1465         Serial number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSP           Firmware level         3283           Size in MB         8678
Product or model number      ST39204L         FRU part number      19K1465         Serial number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSP           Firmware level         3283           Size in MB         8678           State         Online
Product or model number      ST39204L         FRU part number      19K1465         Serial number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A
Product or model number      ST39204L         FRU part number      19K1465         Serial number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSP           Firmware level         3283           Size in MB         8678           State         Online
Product or model number      ST39204L         FRU part number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No
Product or model number        ST39204L           FRU part number        19K1465           Serial number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           A PFA error         No           Type         Hard disk drive
Product or model number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           APFA error         No           Type         Hard disk drive           Channel         1
Product or model number      ST39204L         FRU part number      19K1465         Serial number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         3
Product or model number      ST39204L         FRU part number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           APFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         3           Vendor         IBM-PSG
Product or model number      ST39204L         FRU part number      19K1465         Serial number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         3
Product or model number      ST39204L         FRU part number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           APFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         3           Vendor         IBM-PSG
Product or model number      ST39204L         FRU part number      19K1465         Serial number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           APFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         3           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465
Product or model number      ST39204L         FRU part number      19K1465         Serial number	Product or model number         ST39204L           FRU part number         19K1465           Serial number         3BV04SSB           Firmware level         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         2           Vendor         IBM-PSG           Product or model number         ST39204L           FRU part number         19K1465           Serial number         3283           Size in MB         8678           State         Online           Array letter         A           PFA error         No           Type         Hard disk drive           Channel         1           SCSI ID         3           Vendor         IBM-PSG           Product or model number         ST39204L

Size in MB8678	FRU part number07K7027
StateOnline	FRU serial number1R023052021
Array letterA	
PFA errorNo	FRU type
11 A CHOL	FRU vendor
Type Hard diek drive	
TypeHard disk drive	FRU date of manufacture
Channel1	FRU part numberÅ
SCSI ID4	FRU serial number
VendorIBM-PSG	TIDAY :
Product or model numberST39204L	FRU type
FRU part number19K1465	FRU vendor
Serial number3BV04Q5F	FRU date of manufacture
Firmware level3283	FRU part number
Size in MB8678	FRU serial number
StateOnline	
Array letterA	FRU type
PFA errorNo	FRU vendor
	FRU date of manufacture
TypeHard disk drive	FRU part number4
Channel1	Ü7038
SCSI ID5	FRU serial numberÀ
VendorIBM-PSG	
Product or model numberST39204L	
	FRU typeCARD
FRU part number19K1465	FRU vendorIBM
Serial number3BV04SG9	FRU date of manufacture05/2000
Firmware level3283	FRU part number07K7048
Size in MB8678	FRU serial number1R024052143
StateOnline	
Array letterA	SCSI channel 2
PFA errorNo	
	TypeHard disk drive
TypeHard disk drive	Channel2
Channel1	SCSI ID8
SCSI ID6	VendorIBM-PSG
VendorIBM-PSG	Product or model numberST39204L
Product or model numberST39204L	FRU part number19K1465
FRU part number19K1465	Serial number3BV04S4J
Serial number3BV04SM4	Firmware level
Firmware level3283	Size in MB8678
Size in MB8678	StateOnline
StateOnline	
	Array letterA PFA errorNo
Array letterA	PFA efforNo
PFA errorNo	m
T 1	TypeHard disk drive
TypeEnclosure	Channel2
Channel1	SCSI ID9
SCSI ID15	VendorIBM-PSG
Enclosure statusOkay	Product or model numberST39204L
Fan 1 statusOkay	FRU part number19K1465
Fan 2 statusOkay	Serial number3BV04Q1B
Power supply 1 statusOkay	Firmware level3283
Power supply 2 statusOkay	Size in MB8678
Temperature statusNormal	StateOnline
Enclosure ID0	Array letterA
VendorIBM	PFA errorNo
Product or model numberEXP300	
Serial number`	TypeHard disk drive
Firmware levelD014	Channel2
I IIIIwale level	SCSI ID10
FRU type	VendorIBM-PSG
FRU vendor	Product or model numberST39204L
FRU date of manufacture	FRU part number19K1465
FRU part number	Serial number3BV04SLQ
FRU serial number	Firmware level3283
	Size in MB8678
FRU typeCARD	StateOnline
EDIL d IDM	
FRU vendorIBM	Array letterA
FRU date of manufacture05/2000	

	FRU type
TypeHard disk drive	FRU vendor
Channel2	FRU date of manufacture
SCSI ID11	FRU part number
VendorIBM-PSG	FRU serial number
Product or model numberST39204L	
	EDIT +
FRU part number19K1465	FRU typeCARD
Serial number3BV04PLX	FRU vendorIBM
Firmware level3283	FRU date of manufacture05/2000
Size in MB8678	FRU part number07K7027
StateOnline	FRU serial number1R023052020
Array letterA	
PFA errorNo	FRU type
	FRU vendor
TypeHard disk drive	FRU date of manufacture
Channel2	FRU part numberA
SCSI ID12	FRU serial number
VendorIBM-PSG	
Product or model numberST39204L	FRU type
FRU part number19K1465	FRU vendor
Serial number3BV04Q17	FRU date of manufacture
Firmware level3283	FRU part number
Size in MB8678	FRU serial number
StateOnline	
Array letterA	FRU type
PFA errorNo	FRU vendor
1111 01101	FRU date of manufacture
TypeHard disk drive	FRU part number4
Channel2	Ü7038
SCSI ID	FRU serial numberÀ
VendorIBM-PSG	
	EDITO- CARD
Product or model numberST39204L	FRU typeCARD
FRU part number19K1465	FRU vendorIBM
Serial number3BV04SWG	FRU date of manufacture05/2000
	FRU part number07K7048
Firmware level3283	
Size in MB8678	FRU serial number1R024052143
Size in MB8678 StateOnline	
Size in MB	FRU serial number1R024052143
Size in MB8678 StateOnline	
Size in MB	FRU serial number1R024052143
Size in MB	FRU serial number1R024052143  End of the configuration information for controller 4
Size in MB	End of the configuration information for controller 4 Information for controller 5
Size in MB	FRU serial number1R024052143  End of the configuration information for controller 4
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller typeServeRAID-4Mx
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller typeServeRAID-4Mx
Size in MB	End of the configuration information for controller 4  Information for controller 5
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller typeServeRAID-4Mx BIOS version4.80.24
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       \$\$\$\$ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         APFA error       No         Type       Enclosure         Channel       2         SCSI ID       15         Enclosure status       Okay         Fan 1 status       Okay         Power supply 1 status       Okay         Power supply 2 status       Okay	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         APFA error       No         Type       Enclosure         Channel       2         SCSI ID       15         Enclosure status       Okay         Fan 1 status       Okay         Power supply 1 status       Okay         Power supply 2 status       Okay         Temperature status       Normal	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         APFA error       No         Type       Enclosure         Channel       2         SCSI ID       15         Enclosure status       Okay         Fan 1 status       Okay         Power supply 1 status       Okay         Power supply 2 status       Okay         Temperature status       Normal         Enclosure ID       0	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         APFA error       No         Type       Enclosure         Channel       2         SCSI ID       15         Enclosure status       Okay         Fan 1 status       Okay         Power supply 1 status       Okay         Power supply 2 status       Okay         Temperature status       Normal	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB       8678         State       Online         Array letter       A         PFA error       No         Type       Hard disk drive         Channel       2         SCSI ID       14         Vendor       IBM-PSG         Product or model number       ST39204L         FRU part number       19K1465         Serial number       3283         Size in MB       8678         State       Online         Array letter       A         APFA error       No         Type       Enclosure         Channel       2         SCSI ID       15         Enclosure status       Okay         Fan 1 status       Okay         Power supply 1 status       Okay         Power supply 2 status       Okay         Temperature status       Normal         Enclosure ID       0         Vendor       IBM	End of the configuration information for controller 4  Information for controller 5  Controller type
Size in MB	End of the configuration information for controller 4
Size in MB	End of the configuration information for controller 4  Information for controller 5  Controller type

Number of logical drives1	Size in MB	17357
Stripe order (channel/device)1/0 1/1 1/2 1/3 1/4 1/5 2/8 2/9 2/10 2/11 2/12	State	
2/13	Array letter	
Number of physical drives12	PFA error	
Logical drives in array A	Type	Hard disk drive
	Channel	1
Logical drive1	SCSI ID	
Array letterA	Vendor	
StateOkay		mberST318404
RAID level0	FRU part number	
Data space in MB208284	Serial number	
Parity space in MB0	Firmware level Size in MB	
Date created		
Write-cache modeWrite through	StateArray letter	
Merge-group number207 Merge-group stateNon-shared	PFA error	
Weige-group statevon-snared	TTA CHOL	140
	Type	Hard disk drive
Physical drives in array A	Channel	
	SCSI ID	
TypeHard disk drive	Vendor	
Channel1		mberST318404
SCSI ID0	FRU part number	
VendorIBM-PSG	Serial number	3BT1DB1X
Product or model numberST318404	Firmware level	3283
FRU part number19K1467	Size in MB	17357
Serial number3BT1BZVF	State	Online
Firmware level3283	Array letter	A
Size in MB17357	PFA error	No
StateOnline		
Array letterA	Type	
PFA errorNo	Channel	
	SCSI ID	
TypeHard disk drive	Vendor	
Channel1		mberST318404
SCSI ID1	FRU part number	19K1467
VendorIBM-PSG	Serial number	
Product or model numberST318404	Firmware level	
FRU part number19K1467 Serial number3BT1C9K8	Size in MB	
Firmware level383	Array letter	
Size in MB17357	PFA error	
StateOnline	TTA CHOL	140
Array letterA	Туре	Hard disk drive
PFA errorNo	Channel	
	SCSI ID	
TypeHard disk drive	Vendor	
Channel1		mberST318404
SCSI ID2	FRU part number	
VendorIBM-PSG	Serial number	3BT1D2T8
Product or model numberST318404	Firmware level	3283
FRU part number19K1467	Size in MB	17357
Serial number3BT1D6WL	State	
Firmware level3283	Array letter	
Size in MB17357	PFA error	No
StateOnline		
Array letterA	Type	
PFA errorNo	Channel	
T I I I I I I I I I I I I I I I I I I I	SCSI ID	
TypeHard disk drive	Vendor	
Channel 1		mberST318404
SCSI ID	FRU part number	
VendorIBM-PSG	Serial number	
Product or model numberST318404	Firmware level	
FRU part number	Size in MB	
Serial number3BT1CT08 Firmware level3283	StateArray letter	
1 IIIIwai C (C/Cl	Array ICUEL	

DE 4	Lacar ID
PFA errorNo	SCSI ID6 VendorIBM-ESXS
TypeHard disk drive	Product or model numberST373405
Channel2	FRU part number06P5319
SCSI ID11	Serial number3EK00A26
VendorIBM-PSG	Firmware levelB242
Product or model numberST318404	Size in MB70006
FRU part number19K1467	StateOnline
Serial number3BT1D3S5	Array letterB
Firmware level	PFA errorNo
StateOnline	TypeHard disk drive
Array letterA	Channel2
PFA errorNo	SCSI ID14
	VendorIBM-ESXS
TypeHard disk drive	Product or model numberST373405
Channel2	FRU part number06P5319
SCSI ID12	Serial number3EK00A1S
VendorIBM-PSG	Firmware levelB242
Product or model numberST318404 FRU part number19K1467	Size in MB70006 StateOnline
Serial number3BT0X0BZ	Array letterB
Firmware level3283	PFA errorNo
Size in MB17357	
StateOnline	
Array letterA	SCSI channel 1
PFA errorNo	
W 1811	TypeHard disk drive
TypeHard disk drive	Channel1
Channel2 SCSI ID13	SCSI ID0 VendorIBM-PSG
VendorIBM-PSG	Product or model numberST318404
Product or model numberST318404	FRU part number19K1467
FRU part number19K1467	Serial number3BT1BZVF
Serial number3BT1D67K	Firmware level3283
Firmware level3283	Size in MB17357
Size in MB17357	StateOnline
StateOnline	Array letterA
Array letterA PFA errorNo	PFA errorNo
FFA CHOL	TypeHard disk drive
Array B	Channel1
	SCSI ID1
Array identifierB	VendorIBM-PSG
Array size in MB140013	Product or model numberST318404
Free space in MB1	FRU part number19K1467
Number of logical drives1	Serial number3BT1C9K8
Stripe order (channel/device)1/6 2/14	Firmware level3283
Number of physical drives2	Size in MB17357 StateOnline
Logical drives in array B	Array letterA
	PFA errorNo
Logical drive2	
Array letterB	TypeHard disk drive
StateOkay	Channel1
RAID level1	SCSI ID2
Data space in MB70006	VendorIBM-PSG
Parity space in MB70006	Product or model numberST318404
Date created10/31/01 Write-cache modeWrite through	FRU part number19K1467 Serial number3BT1D6WL
Merge-group number207	Firmware level3283
Merge-group stateNon-shared	Size in MB17357
	StateOnline
	Array letterA
Physical drives in array B	PFA errorNo
TypeHard disk drive	TypeHard disk drive
Channel1	Channel1

SCSI ID3	Microsoft Windows 2000 Server System
VendorIBM-PSG	1
Product or model numberST318404	Information Report
FRU part number19K1467 Serial number3BT1CT08	C
Firmware level	System Information report written at: 11/01/2001 05:10:40 PM [System Information]
Size in MB17357	[Oysten mornation]
StateOnline	[ Following are sub-categories of this main category ]
Array letterA	
PFA errorNo	[System Summary]
TypeHard disk drive	Item Value
Channel1	OS Name Microsoft Windows 2000 Server
SCSI ID4	Version 5.0.2195 Service Pack 2 Build 2195
VendorIBM-PSG	OS Manufacturer Microsoft Corporation
Product or model numberST318404	System Name CLIENT10
FRU part number19K1467	System Manufacturer IBM
Serial number3BT1DBGL Firmware level3283	System Model IBM eserver xSeries 220 -[4444aaa]- System Type X86-based PC
Size in MB	Processor x86 Family 6 Model 8 Stepping 10 GenuineIntel ~996 Mhz
StateOnline	Processor x86 Family 6 Model 8 Stepping 10 GenuineIntel ~996 Mhz
Array letterA	BIOS Version IBM BIOS Ver 1.0
PFA errorNo	Windows Directory C:\WINNT
TypeHard disk drive	System Directory C:\WINNT\System32
Channel1	Boot Device \Device\Harddisk0\Partition1 Locale United States
SCSI ID5	User NameCLIENT10\Administrator
VendorIBM-PSG	Time Zone Eastern Standard Time
Product or model numberST318404	Total Physical Memory 654,808 KB
FRU part number19K1467	Available Physical Memory 562,472 KB
Serial number3BT1DB1X Firmware level3283	Total Virtual Memory 2,079,212 KB
Size in MB17357	Available Virtual Memory 1,906,704 KB Page File Space 1,424,404 KB
StateOnline	Page File C:\pagefile.sys
Array letterA	100
PFA errorNo	[Hardware Resources]
TypeHard disk drive	[Fallowing are sub-entagonies of this main entagons]
Channel1	[ Following are sub-categories of this main category ]
SCSI ID6	[Conflicts/Sharing]
VendorIBM-ESXS	
Product or model numberST373405	Resource Device
FRU part number06P5319 Serial number3EK00A26	No conflicted/shared resources
Firmware levelB242	[DMA]
Size in MB70006	
StateOnline	Channel Device Status
Array letterB	2 Standard floppy disk controller OK
PFA errorNo	4 Direct memory access controller OK
TypeEnclosure	[Forced Hardware]
Channel1	[Forest Hardware]
SCSI ID15	Device PNP Device ID
Enclosure statusOkay	No Forced Hardware
Fan 1 statusOkay Fan 2 statusOkay	[IVO]
Power supply 1 statusOkay	[1/O]
Power supply 2 statusOkay	Address Range Device Status
Temperature statusNormal	0x0000-0x303F PCI bus OK
Enclosure ID0	0x0000-0x303F Direct memory access controller OK
VendorIBM  Product or model number EVP200	0x03B0-0x03BB S3 Inc. Savage4 OK
Product or model numberEXP300 Serial number	0x03C0-0x03DF S3 Inc. Savage4 OK
Corner Haliforn	0x3000-0x303F IBM 10/100 Ethernet Server Adapter OK 0x2000-0x2FFF DEC 21152 PCI to PCI bridge OK
Client Configuration Parameters	0x2000-0x2FFF Intel(R) PRO/100+ Dual Port Server Adapter
oga.ation i aiamotoio	OK
	0x2020-0x203F Intel(R) PRO/100+ Dual Port Server Adapter #2
	OK

			_				
0x0A79-0x0A79	ISAPNP Read Data Port	OK		000-0xFBFFFFF	S3 Inc. Savage4	OK	
0x0279-0x0279	ISAPNP Read Data Port	OK		000-0xFFFFFFFF	PCI bus OK		
0x02F4-0x02F7	ISAPNP Read Data Port	OK		0000-0xFEBFFFFF	S3 Inc. Savage4	OK	
0x002E-0x002F	Motherboard resources	OK		F000-0xFEB7FFFF	IBM 10/100 Etherne	t Server Ad	apter
0x0438-0x0439	Motherboard resources  Motherboard resources	OK OK	OK	1000 0 PEDSEEEE	IDM 10/100 Ed	. C . A 1	
0x0430-0x0437		UK	OK OK	0000-0xFEB5FFFF	IBM 10/100 Etherne	t Server Ad	apter
0x0430-0x0437	Not Available OK Standard 101/102-Key or Micros	noft Matural DC/2	_	000 0vEE1EEEE	DEC 21152 DCI to E	CI bridge	OK
0x0060-0x0060 Keyboard OK	Standard 101/102-Rey of Micros	SOIL Natural PS/2		000-0xFE1FFFFF 000-0xFBFFFFFF	DEC 21152 PCI to F DEC 21152 PCI to F		OK OK
0x0064-0x0064	Standard 101/102-Key or Micros	soft Natural PS/2		000-0xFBFFFFFF	Intel(R) PRO/100+ I		
Keyboard OK	Standard 101/102-Rey of Whero.	301t (Vatural 1 5/2	OK OK	0000-0XI DI I I I I I	Intel(K) 1 KO/100+1	Juai i oit Sc	Adapter
0x03F0-0x03F5	Standard floppy disk controller	OK	_	000-0xFE0FFFF	Intel(R) PRO/100+ I	Dual Port Se	erver Adapter
0x03F7-0x03F7	Standard floppy disk controller		OK	000 0.11 2011111	11101(11) 1110/100	3 441 1 011 51	or ver rrampter
0x0378-0x037F	Printer Port (LPT1) OK			000-0xFBF01FFF	Intel(R) PRO/100+ I	Dual Port Se	erver Adapter
0x03F8-0x03FF	Communications Port (COM1)	OK	#2	OK	· /		
0x02F8-0x02FF	Communications Port (COM2)	OK	0xFE100	000-0xFE1FFFFF	Intel(R) PRO/100+ I	Dual Port Se	erver Adapter
0x0020-0x0021	Advanced programmable interru	pt controller OK	#2	OK	. ,		•
0x00A0-0x00A1	Advanced programmable interru	pt controllerOK	0xFEB7E	E000-0xFEB7EFFF	Standard OpenHCD	USB Host (	Controller
0x0080-0x008F	Direct memory access controller		OK				
0x00C0-0x00DF	Direct memory access controller	OK	0x280000	000-0xECFFFFFF	PCI bus OK		
0x0040-0x0043	System timer OK			0000-0xEFFFFFFF	PCI bus OK		
0x0070-0x0073	System CMOS/real time clock	OK		000-0xEFFFFFF	Adaptec AIC-7892 -	Ultra160 S	CSI
0x0061-0x0061	System speaker OK		OK				
0x00F0-0x00FF	Numeric data processor	OK		000-0xEF1FFFFF	DEC 21152 PCI to F		OK
0x0600-0x0600	Motherboard resources	OK		000-0xECFFFFFF	DEC 21152 PCI to F		OK
0x0374-0x0375	Motherboard resources	OK		0000-0xECFFFFFF	Intel(R) PRO/100+ I	Dual Port Se	erver Adapter
0x0377-0x0377	Motherboard resources	OK	#3	OK	Y . 1/D) DD 0/100 . Y		
0x0F50-0x0F58	Motherboard resources	OK		000-0xEF0FFFFF	Intel(R) PRO/100+ I	Jual Port Se	erver Adapter
0x0700-0x070F	Standard Dual Channel PCI IDE	Controller OK	#3	OK 000-0xECF01FFF	I4-1/D) DD O/100 + I	D1 D4 C-	4
0x01F0-0x01F7 0x03F6-0x03F6	Primary IDE Channel OK Primary IDE Channel OK		#4	OK	Intel(R) PRO/100+ I	Juai Port Sc	erver Adapter
0x0170-0x0177	Secondary IDE Channel	OK		000-0xEF1FFFFF	Intel(R) PRO/100+ I	Qual Dort Sc	ruar Adaptar
0x0376-0x0376	Secondary IDE Channel	OK	#4	OK	IIICI(K) I KO/100+ I	Juai i Oit St	Auapter
0x3040-0xFFFF	PCI bus OK	OK	π <b>-</b> τ	OK			
0x3100-0x31FF	Adaptec AIC-7892 - Ultra160 Se	CSI OK	Compon	entsl			
0x4000-0x4FFF		OK OK	Compon	icitoj			
0x4000-0x4FFF	Intel(R) PRO/100+ Dual Port Se		[ Followi	ng are sub-categories o	of this main category 1		
OK	()	- · · · · · · · · · · · · · · · · · · ·	[				
0x4020-0x403F	Intel(R) PRO/100+ Dual Port Se	rver Adapter #4	Multime	dia			
OK				•			
			[ Followi	ng are sub-categories of	of this main category ]		
[IRQs]							
			[Audio C	odecs]			
IRQ Number	Device						
	t ACPI-Compliant System		Codec	Manufacturer	Description	Status	File
31 S3 Inc. S	2		Version	Size Creation			
	100 Ethernet Server Adapter			system32\iac25_32.ax			udio software
	PRO/100+ Dual Port Server Adapte		OK	C:\WINNT\System3:		2.05.53	195.00 KB
( )	PRO/100+ Dual Port Server Adapte		(199,680	• /	9 7:00:00 AM		
	101/102-Key or Microsoft Natural	PS/2 Keyboard		system32\msg723.acm			107 77 KD
	mpatible Mouse		OK	C:\WINNT\System3:		4.4.3383	106.77 KB
	floppy disk controller ications Port (COM1)		(109,328		1 2:09:33 PM		OK
	ications Port (COM1)			system32\tssoft32.acm JT\System32\TSSOFT3		0 27 VD	(9,488 bytes)
	CMOS/real time clock			9 7:00:00 AM	32.ACM 1.01	9.27 KD (	9,400 bytes)
	data processor			system32\msgsm32.acr	m Microsoft Corporation	nn .	
	IDE Channel		OK	C:\WINNT\System3		5.00.2134	l 1
	OpenHCD USB Host Controller			3 (22,800 bytes)	12/7/1999 7:00:00 A		
	AIC-7892 - Ultra160 SCSI			system32\msg711.acm			
	PRO/100+ Dual Port Server Adapte	er #3	OK	C:\WINNT\System3:		5.00.2134	1.1
` /	PRO/100+ Dual Port Server Adapte			3 (10,512 bytes)	12/7/1999 7:00:00 A		-
				system32\msadp32.acm			
[Memory]			OK	C:\WINNT\System3:		5.00.2134	l.1
				3 (15,120 bytes)	12/7/1999 7:00:00 A		
Range Device	Status			system32\imaadp32.aci			
0xA0000-0xBFFFF	PCI bus OK		OK	C:\WINNT\System3		5.00.2134	1.1
0xA0000-0xBFFFF			16.27 KE	3 (16,656 bytes)	12/7/1999 7:00:00 A	M	
0xF0000000-0xFBF	FFFFF PCI bus OK						
			1				

Bits/Pixel 16 OK C:\WINNT\System32\LHACM.ACM 4.4.3385 33.27 KB 9/17/2001 2:09:34 PM (34,064 bytes) [Infrared] [Video Codecs] Item Value Codec Manufacturer Description Status File No infrared devices Version Size Creation Date c:\winnt\system32\ir50 32.dll Intel Corporation Indeo® video 5.10 [Input] C:\WINNT\System32\IR50 32.DLL R.5.10.15.2.55 737.50 KB (755,200 bytes) 12/7/1999 7:00:00 AM [ Following are sub-categories of this main category ] c:\winnt\system32\msh261.drv Microsoft Corporation C:\WINNT\System32\MSH261.DRV 4.4.3385 163.77 KB [Keyboard] 9/17/2001 2:09:33 PM (167,696 bytes) c:\winnt\system32\msh263.drv Microsoft Corporation Item Value C:\WINNT\System32\MSH263.DRV 4.4.3385 252.27 KB Description Standard 101/102-Key or Microsoft Natural PS/2 (258,320 bytes) 9/17/2001 2:09:09 PM Keyboard c:\winnt\system32\msrle32.dll Microsoft Corporation Name Enhanced (101- or 102-key) C:\WINNT\System32\MSRLE32.DLL 5.00.2134.1 Lavout 00000409 ACPI\PNP0303\4&389C1010&0 10.77 KB (11,024 bytes) 12/7/1999 7:00:00 AM PNP Device ID NumberOfFunctionKeys 12 C:\WINNT\System32\MSVIDC32.DLL 5.00.2134.1 27.27 KB (27,920 bytes) 12/7/1999 7:00:00 AM c:\winnt\system32\ir32 32.dll Intel(R) Corporation [Pointing Device] C:\WINNT\System32\IR32\_32.DLL Not Available 194.50 KB (199,168 bytes) 12/7/1999 7:00:00 AM Item Value c:\winnt\system32\iccvid.dll Radius Inc. OK Hardware Type PS/2 Compatible Mouse 1.10.0.6 108.00 KB (110,592 C:\WINNT\System32\ICCVID.DLL Number of Buttons bytes) 12/7/1999 7:00:00 AM Status PNP Device ID ACPI\PNP0F13\4&389C1010&0 [CD-ROM] Power Management Supported False Double Click Threshold Item Value Handedness Right Handed Operation Drive CD-ROM Drive Description Media Loaded [Modem] False Media Type CD-ROM LG CD-ROM CRD-8484B Value Name Item (Standard CD-ROM drives) Manufacturer No modems Status OK Transfer Rate Not Available [Network] SCSI Target ID PNP Device ID [ Following are sub-categories of this main category ] IDE\CDROMLG CD-ROM CRD-8484B 1.05 &326853DD&0&0.0.0 [Adapter] Item Value [00000000] Intel(R) PRO/100+ Dual Port Server Adapter [Sound Device] Name Adapter Type Ethernet 802.3 Value Product Name Intel(R) PRO/100+ Dual Port Server Adapter Installed True No sound devices PNP Device ID PCI\VEN\_8086&DEV\_1229&SUBSYS\_10F08086&REV\_05\4&273796BB& [Display] 0&2048 Last Reset 11/1/2001 12:02:59 PM Item Value S3 Inc. Savage4 Index Name 0 PNP Device ID Service Name E100B IP Address 192.168.110.10 PCI\VEN 5333&DEV 8A22&SUBSYS 01C51014&REV 06\3&267A616A IP Subnet 255.255.255.0 Default IP Gateway Not Available Adapter Type S3 Savage4, S3 compatible Adapter Description S3 Inc. Savage4 DHCP Enabled False Adapter RAM 8.00 MB (8,388,608 bytes) DHCP Server Not Available Installed Drivers s3sav4.dll DHCP Lease Expires Not Available Driver Version 5.01.840.0001 DHCP Lease Obtained Not Available INF File s3sav4.inf (S3Inc section) MAC Address 00:03:47:22:5D:1E Color Planes Service Name E100B Color Table Entries 65536 IRQ Number 16 Resolution 800 x 600 x 60 hertz I/O Port 0x2000-0x2FFF

c:\winnt\system32\drivers\e100bnt5.sys (119056, 5.40.11.0000) Driver Service Name **PptpMiniport** [00000001] Intel(R) PRO/100+ Dual Port Server Adapter Name IP Address Not Available IP Subnet Not Available Adapter Type Ethernet 802.3 Product Name Intel(R) PRO/100+ Dual Port Server Adapter Default IP Gateway Not Available Installed True **DHCP** Enabled False **DHCP** Server PNP Device ID Not Available PCI\VEN 8086&DEV 1229&SUBSYS 10F08086&REV 05\4&273796BB& DHCP Lease Expires Not Available 0&2848 DHCP Lease Obtained Not Available Last Reset 11/1/2001 12:02:59 PM MAC Address 50:50:54:50:30:30 PptpMiniport Index Service Name Service Name E100B Driver c:\winnt\system32\drivers\raspptp.sys (47856, 5.00.2160.1) IP Address 192.168.120.10 IP Subnet 255.255.255.0 [00000005] Direct Parallel Name Default IP Gateway Not Available Not Available Adapter Type **DHCP** Enabled Direct Parallel False Product Name **DHCP Server** Not Available Installed True PNP Device ID ROOT\MS PTIMINIPORT\0000 DHCP Lease Expires Not Available DHCP Lease Obtained Not Available Last Reset 11/1/2001 12:02:59 PM MAC Address 00:03:47:22:5D:1F Index 5 E100B Service Name Service Name Raspti IRQ Number IP Address Not Available 17 I/O Port 0x2020-0x203F IP Subnet Not Available c:\winnt\system32\drivers\e100bnt5.sys (119056, 5.40.11.0000) Default IP Gateway Driver Not Available DHCP Enabled False [00000002] RAS Async Adapter DHCP Server Not Available Name Adapter Type Not Available DHCP Lease Expires Not Available RAS Async Adapter DHCP Lease Obtained Not Available Product Name Installed True MAC Address Not Available Service Name PNP Device ID Not Available Raspti Last Reset 11/1/2001 12:02:59 PM Driver c:\winnt\system32\drivers\raspti.sys (16880, 5.00.2146.1) Index 2 Service Name AsyncMac Name [00000006] WAN Miniport (IP) IP Address Not Available Adapter Type Not Available IP Subnet Not Available Product Name WAN Miniport (IP) Default IP Gateway Not Available Installed True DHCP Enabled PNP Device ID ROOT\MS NDISWANIP\0000 False **DHCP** Server Last Reset 11/1/2001 12:02:59 PM Not Available DHCP Lease Expires Not Available Index 6 DHCP Lease Obtained Service Name NdisWan Not Available MAC Address Not Available IP Address Not Available IP Subnet Not Available Service Name Not Available Default IP Gateway Not Available [00000003] WAN Miniport (L2TP) DHCP Enabled Name False Not Available **DHCP** Server Not Available Adapter Type DHCP Lease Expires Not Available WAN Miniport (L2TP) Product Name Installed True DHCP Lease Obtained Not Available ROOT\MS\_L2TPMINIPORT\0000 PNP Device ID MAC Address Not Available Last Reset 11/1/2001 12:02:59 PM Service Name NdisWan Driver c:\winnt\system32\drivers\ndiswan.sys (90096, 5.00.2195.2779) Index Service Name Rasl2tp [00000007] IBM 10/100 Ethernet Server Adapter IP Address Not Available Name IP Subnet Not Available Adapter Type Ethernet 802.3 IBM 10/100 Ethernet Server Adapter Default IP Gateway Not Available Product Name Installed True DHCP Enabled False DHCP Server Not Available PNP Device ID DHCP Lease Expires Not Available PCI\VEN 8086&DEV 1229&SUBSYS 01F11014&REV 0C\3&267A616A& Not Available DHCP Lease Obtained 0&10 MAC Address Last Reset 11/1/2001 12:02:59 PM Not Available Rasl2tp Service Name Index Driver c:\winnt\system32\drivers\rasl2tp.sys (50800, 5.00.2179.1) Service Name E100B IP Address 192.168.132.251 [00000004] WAN Miniport (PPTP) IP Subnet 255.255.255.0 Name Adapter Type Wide Area Network (WAN) Default IP Gateway Not Available Product Name WAN Miniport (PPTP) DHCP Enabled False Installed True DHCP Server Not Available ROOT\MS PPTPMINIPORT\0000 DHCP Lease Expires Not Available PNP Device ID Last Reset 11/1/2001 12:02:59 PM **DHCP** Lease Obtained Not Available

00:02:55:AA:02:D7 MAC Address SupportsEncryption False Service Name E100B SupportsExpeditedData True IRQ Number 2.7 SupportsGracefulClosing True SupportsGuaranteedBandwidth I/O Port 0x3000-0x303F False Driver c:\winnt\system32\drivers\e100bnt5.sys (119056, 5.40.11.0000) SupportsMulticasting False MSAFD Tcpip [UDP/IP] [00000008] Intel(R) PRO/100+ Dual Port Server Adapter Name Name ConnectionlessService Adapter Type Ethernet 802.3 True Product Name Intel(R) PRO/100+ Dual Port Server Adapter GuaranteesDelivery False Installed True GuaranteesSequencing False MaximumAddressSize PNP Device ID 16 bytes PCI\VEN\_8086&DEV\_1229&SUBSYS\_10F08086&REV\_05\4&15F5026D& MaximumMessageSize 65467 bytes 0&2028 MessageOriented Last Reset 11/1/2001 12:02:59 PM MinimumAddressSize16 bytes PseudoStreamOriented Index False Service Name E100B SupportsBroadcasting True IP Address 192.168.210.10 SupportsConnectData False IP Subnet 255.255.255.0 SupportsDisconnectData False Default IP Gateway Not Available SupportsEncryption False **DHCP** Enabled False SupportsExpeditedData False DHCP Server Not Available SupportsGracefulClosing False DHCP Lease Expires Not Available SupportsGuaranteedBandwidth False DHCP Lease Obtained Not Available SupportsMulticasting True 00:90:27:E8:71:60 MAC Address Service Name E100B Name **RSVP UDP Service Provider** IRO Number ConnectionlessService True I/O Port 0x4000-0x4FFF GuaranteesDelivery False GuaranteesSequencing c:\winnt\system32\drivers\e100bnt5.sys (119056, 5.40.11.0000) Driver False MaximumAddressSize 16 bytes [00000009] Intel(R) PRO/100+ Dual Port Server Adapter MaximumMessageSize Name 65467 bytes Adapter Type Ethernet 802.3 MessageOriented True Product Name Intel(R) PRO/100+ Dual Port Server Adapter MinimumAddressSize16 bytes Installed True **PseudoStreamOriented** False PNP Device ID SupportsBroadcasting True PCI\VEN\_8086&DEV\_1229&SUBSYS\_10F08086&REV\_05\4&15F5026D& SupportsConnectData False SupportsDisconnectData False Last Reset 11/1/2001 12:02:59 PM SupportsEncryption True SupportsExpeditedData Index False Service Name E100B SupportsGracefulClosing False IP Address 192.168.220.10 SupportsGuaranteedBandwidth False IP Subnet 255.255.255.0 SupportsMulticasting True Default IP Gateway Not Available **DHCP** Enabled RSVP TCP Service Provider False DHCP Server ConnectionlessService Not Available False GuaranteesDelivery True DHCP Lease Expires Not Available Not Available DHCP Lease Obtained GuaranteesSequencing True MAC Address 00:90:27:E8:71:61 MaximumAddressSize 16 bytes Service Name E100B MaximumMessageSize 0 bytes IRQ Number MessageOriented 2.1 False I/O Port 0x4020-0x403F MinimumAddressSize16 bytes c:\winnt\system32\drivers\e100bnt5.sys (119056, 5.40.11.0000) PseudoStreamOriented Driver False SupportsBroadcasting False SupportsConnectData False [Protocol] SupportsDisconnectData False SupportsEncryption True Value SupportsExpeditedData Item True MSAFD Tcpip [TCP/IP] SupportsGracefulClosing Name True ConnectionlessService False SupportsGuaranteedBandwidth False SupportsMulticasting False GuaranteesDelivery True GuaranteesSequencing True MaximumAddressSize 16 bytes MSAFD NetBIOS Name MaximumMessageSize 0 bytes [\Device\NetBT\_Tcpip\_{44CF5AB0-B478-4D98-AD86-5CD3B62648C2}] SEQPACKET 6 MessageOriented False MinimumAddressSize16 bytes ConnectionlessService False False PseudoStreamOriented GuaranteesDelivery True SupportsBroadcasting False GuaranteesSequencing True SupportsConnectData False MaximumAddressSize 20 bytes SupportsDisconnectData False MaximumMessageSize 64000 bytes

MessageOriented True			
		SupportsGracefulClosing	False
MinimumAddressSize20 bytes		SupportsGuaranteedBandwidth	False
PseudoStreamOriented	False	SupportsMulticasting False	
SupportsBroadcasting False	1 4150	Supportsivianticusting Tuise	
		N MGAED N DIOG	
SupportsConnectData False		Name MSAFD NetBIOS	
SupportsDisconnectData	False	[\Device\NetBT_Tcpip_{6FCF1	9B9-D1BC-4314-A154-2E811A2CC678}]
SupportsEncryption False		SEQPACKET 4	
SupportsExpeditedData	False	ConnectionlessService	False
SupportsGracefulClosing	False	GuaranteesDelivery True	T disc
			T.
SupportsGuaranteedBandwidth	False	GuaranteesSequencing	True
SupportsMulticasting False		MaximumAddressSize	20 bytes
		MaximumMessageSize	64000 bytes
Name MSAFD NetBIOS		MessageOriented True	,
	AB0-B478-4D98-AD86-5CD3B62648C2}]	MinimumAddressSize20 bytes	
	AB0-B478-4D38-AD80-3CD3B02048C23]		T. I
DATAGRAM 6		PseudoStreamOriented	False
ConnectionlessService	True	SupportsBroadcasting False	
GuaranteesDelivery False		SupportsConnectData False	
GuaranteesSequencing	False	SupportsDisconnectData	False
MaximumAddressSize	20 bytes	SupportsEncryption False	
			P-1
MaximumMessageSize	64000 bytes	SupportsExpeditedData	False
MessageOriented True		SupportsGracefulClosing	False
MinimumAddressSize20 bytes		SupportsGuaranteedBandwidth	False
PseudoStreamOriented	False	SupportsMulticasting False	
SupportsBroadcasting True		supportantiations in a sec	
		N MCAED N (DIOC	
SupportsConnectData False		Name MSAFD NetBIOS	
SupportsDisconnectData	False		9B9-D1BC-4314-A154-2E811A2CC678}]
SupportsEncryption False		DATAGRAM 4	
SupportsExpeditedData	False	ConnectionlessService	True
SupportsGracefulClosing	False	GuaranteesDelivery False	
		GuaranteesSequencing	T I
SupportsGuaranteedBandwidth	False	1 &	False
SupportsMulticasting False		MaximumAddressSize	20 bytes
		MaximumMessageSize	64000 bytes
Name MSAFD NetBIOS		MessageOriented True	•
	329-FA5D-4971-8863-45389D633A46}]	MinimumAddressSize20 bytes	
SEOPACKET 5	327-1 A3D-47/1-0003-43307D033A40}]	PseudoStreamOriented	P-1
•			False
ConnectionlessService	False	SupportsBroadcasting True	
GuaranteesDelivery True		SupportsConnectData False	
GuaranteesDelivery True	True		False
GuaranteesDelivery True GuaranteesSequencing	True	SupportsDisconnectData	False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize	20 bytes	SupportsDisconnectData SupportsEncryption False	
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize		SupportsDisconnectData SupportsEncryption False SupportsExpeditedData	False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True	20 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing	False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize	20 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing	False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True	20 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth	False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented	20 bytes 64000 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing	False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False	20 bytes 64000 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False	False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False	20 bytes 64000 bytes False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS	False False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData	20 bytes 64000 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB}]	False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False	20 bytes 64000 bytes False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS	False False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False	20 bytes 64000 bytes False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{151BB} SEQPACKET 0	False False False False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsExpeditedData	20 bytes 64000 bytes False False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService	False False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing	20 bytes 64000 bytes False False False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\netBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True	False False False False False False  7450-3D28-4525-B2D4-2331C74DCD26}] False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth	20 bytes 64000 bytes False False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	False False False False False  450-3D28-4525-B2D4-2331C74DCD26}] False True
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing	20 bytes 64000 bytes False False False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth	20 bytes 64000 bytes False False False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize	False False False False False  450-3D28-4525-B2D4-2331C74DCD26}] False True
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth	20 bytes 64000 bytes False False False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS	20 bytes 64000 bytes  False  False False False False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\netBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8380E}	20 bytes 64000 bytes False False False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\netBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8380E} DATAGRAM 5	20 bytes 64000 bytes False False False False False 329-FA5D-4971-8863-45389D633A46}]	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\netBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8380E} DATAGRAM 5 ConnectionlessService	20 bytes 64000 bytes  False  False False False False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8380E} DATAGRAM 5	20 bytes 64000 bytes False False False False False 329-FA5D-4971-8863-45389D633A46}]	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\netBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\nethersTcpip_{8380E} DATAGRAM 5 ConnectionlessService GuaranteesDelivery False	20 bytes 64000 bytes False False False False False 329-FA5D-4971-8863-45389D633A46}]	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\nethetatBT_Tcpip_{8380E} DATAGRAM 5 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing	20 bytes 64000 bytes  False  False False False False False Talse Talse False False Talse  True False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData	False False False False False  P450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsExpeditedData SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8380E} DATAGRAM 5 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize	20 bytes 64000 bytes  False  False False False False False Talse  True  False 20 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False	False False False False False  False  False  False  False  False  True 20 bytes 64000 bytes  False  False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{8380E} DATAGRAM 5 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize	20 bytes 64000 bytes  False  False False False False False Talse Talse False False Talse  True False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False  False  False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	20 bytes 64000 bytes  False  False False False False False Talse  True  False 20 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsCracefulClosing	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False  False False False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	20 bytes 64000 bytes False False False False 329-FA5D-4971-8863-45389D633A46}] True False 20 bytes 64000 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsDisconnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False  False  False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	20 bytes 64000 bytes  False  False False False False False Talse  True  False 20 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsCracefulClosing	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False  False False False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	20 bytes 64000 bytes False False False False 329-FA5D-4971-8863-45389D633A46}] True False 20 bytes 64000 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsDisconnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False  False False False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	20 bytes 64000 bytes False False False False 329-FA5D-4971-8863-45389D633A46}] True False 20 bytes 64000 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsConnectData SupportsEncryption False SupportsExpeditedData SupportsGuaranteedBandwidth SupportsMulticasting False	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False  False False False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsExpeditedData SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8380E} DATAGRAM 5 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False	20 bytes 64000 bytes False False False False 329-FA5D-4971-8863-45389D633A46}] True False 20 bytes 64000 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsConnectData SupportsEncryption False SupportsEncryption False SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsExpeditedData SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8380E} DATAGRAM 5 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData	20 bytes 64000 bytes False False False False 329-FA5D-4971-8863-45389D633A46}] True False 20 bytes 64000 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB}]	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False  False False False False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8380E} DATAGRAM 5 ConnectionlessService GuaranteesDelivery False GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumAddressSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsDisconnectData SupportsEncryption False	20 bytes 64000 bytes  False  False  False False False  329-FA5D-4971-8863-45389D633A46}]  True  False 20 bytes 64000 bytes  False	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsConnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB} DATAGRAM 0	False False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False
GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsExpeditedData SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8380E} DATAGRAM 5 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData	20 bytes 64000 bytes False False False False 329-FA5D-4971-8863-45389D633A46}] True False 20 bytes 64000 bytes	SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB} SEQPACKET 0 ConnectionlessService GuaranteesDelivery True GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting False SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{151BB}]	False False False False  450-3D28-4525-B2D4-2331C74DCD26}]  False  True 20 bytes 64000 bytes  False

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GuaranteesDelivery False		SupportsConnectData False	
GuaranteesSequencing	False	SupportsDisconnectData	False
MaximumAddressSize	20 bytes	SupportsEncryption False	
MaximumMessageSize	64000 bytes	SupportsExpeditedData	False
MessageOriented True	o lood by les	SupportsGracefulClosing	False
MinimumAddressSize20 bytes		SupportsGuaranteedBandwidth	False
PseudoStreamOriented	False	SupportsMulticasting False	
SupportsBroadcasting True			
SupportsConnectData False		Name MSAFD NetBIOS	
SupportsDisconnectData  SupportsDisconnectData	P-1		C2D 002D 42E7 D7D0 2DE004D(2DE1)]
	False		C3B-893D-43F7-B7B0-3BF884D63BF1}]
SupportsEncryption False		DATAGRAM 2	
SupportsExpeditedData	False	ConnectionlessService	True
SupportsGracefulClosing	False	GuaranteesDelivery False	
SupportsGuaranteedBandwidth		GuaranteesSequencing	False
	1 disc	MaximumAddressSize	
SupportsMulticasting False			20 bytes
		MaximumMessageSize	64000 bytes
Name MSAFD NetBIOS		MessageOriented True	
[\Device\NetBT Tcpip {FA92I	D5FD-6E01-4F18-A447-837FEDE46296}]	MinimumAddressSize20 bytes	
SEQPACKET 1	,,,,,	PseudoStreamOriented	False
*	P-l		1 disc
ConnectionlessService	False	SupportsBroadcasting True	
GuaranteesDelivery True		SupportsConnectData False	
GuaranteesSequencing	True	SupportsDisconnectData	False
MaximumAddressSize	20 bytes	SupportsEncryption False	
MaximumMessageSize	64000 bytes	SupportsExpeditedData	False
$\mathcal{E}$	04000 bytes		
MessageOriented True		SupportsGracefulClosing	False
MinimumAddressSize20 bytes		SupportsGuaranteedBandwidth	False
PseudoStreamOriented	False	SupportsMulticasting False	
SupportsBroadcasting False			
SupportsConnectData False		Name MSAFD NetBIOS	
	P-l		2E E4EC 424E AEDD 56AA0E507EE7)]
SupportsDisconnectData	False		[2E-F4FC-434F-AEBB-56AA0E507EF7]
SupportsEncryption False		SEQPACKET 3	
SupportsExpeditedData	False	ConnectionlessService	False
SupportsGracefulClosing	False	GuaranteesDelivery True	
SupportsGuaranteedBandwidth		GuaranteesSequencing	True
1.1	raisc	1 0	
SupportsMulticasting False		MaximumAddressSize	20 bytes
		MaximumMessageSize	64000 bytes
Name MSAFD NetBIOS		MessageOriented True	
[\Device\NetBT Tcpip {FA92]	D5FD-6E01-4F18-A447-837FEDE46296}]	MinimumAddressSize20 bytes	
DATAGRAM 1	(FIB (EV) 1110 1111, (65,11EBE (62,0))	PseudoStreamOriented	False
_	T		raisc
ConnectionlessService	True	SupportsBroadcasting False	
GuaranteesDelivery False		SupportsConnectData False	
GuaranteesSequencing	False	SupportsDisconnectData	False
MaximumAddressSize	20 bytes	SupportsEncryption False	
MaximumMessageSize	64000 bytes	SupportsExpeditedData	False
MessageOriented True	04000 bytes		
	ř		
	•	SupportsGracefulClosing	False
MinimumAddressSize20 bytes	·	SupportsGracefulClosing SupportsGuaranteedBandwidth	
	False	SupportsGracefulClosing	False
MinimumAddressSize20 bytes PseudoStreamOriented	False	SupportsGracefulClosing SupportsGuaranteedBandwidth	False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True	False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False	False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False		SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS	False False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData	False False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886}]	False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False	False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886} DATAGRAM 3	False False 52E-F4FC-434F-AEBB-56AA0E507EF7}]
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData		SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886}]	False False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData	False False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886} DATAGRAM 3 ConnectionlessService	False False 52E-F4FC-434F-AEBB-56AA0E507EF7}]
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing	False False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886} DATAGRAM 3 ConnectionlessService GuaranteesDelivery False	False False False  52E-F4FC-434F-AEBB-56AA0E507EF7}] True
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth	False False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886} DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing	False False  2E-F4FC-434F-AEBB-56AA0E507EF7}]  True False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing	False False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886} DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize	False False  2E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False	False False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886} DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize	False False  2E-F4FC-434F-AEBB-56AA0E507EF7}]  True False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS	False False False False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886} DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize	False False  2E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False Name MSAFD NetBIOS	False False False False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886} DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True	False False  2E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8F3546}]	False False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886} DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\netBT_Tcpip_{8F3546} SEQPACKET 2	False False False False False C3B-893D-43F7-B7B0-3BF884D63BF1}	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886}\DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented	False False  2E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\netBT_Tcpip_{8F3546} SEQPACKET 2 ConnectionlessService	False False False False	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [Device\NetBT_Tcpip_{978886}] DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	False False False False False C3B-893D-43F7-B7B0-3BF884D63BF1}	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886}] DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\netBT_Tcpip_{8F3546} SEQPACKET 2 ConnectionlessService	False False False False False C3B-893D-43F7-B7B0-3BF884D63BF1}	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [Device\NetBT_Tcpip_{978886}] DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	False False False False False C3B-893D-43F7-B7B0-3BF884D63BF1}] False True	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886}] DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes  False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8F3546}] SEQPACKET 2 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize	False False False False C3B-893D-43F7-B7B0-3BF884D63BF1}] False True 20 bytes	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886}] DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes  False False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8F3546}] SEQPACKET 2 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize	False False False False False C3B-893D-43F7-B7B0-3BF884D63BF1}] False True	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886}] DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes  False  False False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8F3546}] SEQPACKET 2 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True	False False False False C3B-893D-43F7-B7B0-3BF884D63BF1}] False True 20 bytes	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{978886} DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsDroadcasting True SupportsDisconnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsCracefulClosing	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes  False False False False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	False False False False C3B-893D-43F7-B7B0-3BF884D63BF1}] False True 20 bytes 64000 bytes	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886}] DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsBroadcasting True SupportsDisconnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsCancefulClosing SupportsGuaranteedBandwidth	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes  False  False False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{8F3546}] SEQPACKET 2 ConnectionlessService GuaranteesDelivery True GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True	False False False False C3B-893D-43F7-B7B0-3BF884D63BF1}] False True 20 bytes	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\NetBT_Tcpip_{978886} DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsDroadcasting True SupportsDisconnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsCracefulClosing	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes  False False False False False
MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsConnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	False False False False C3B-893D-43F7-B7B0-3BF884D63BF1}] False True 20 bytes 64000 bytes	SupportsGracefulClosing SupportsGuaranteedBandwidth SupportsMulticasting False  Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{978886}] DATAGRAM 3 ConnectionlessService GuaranteesDelivery False GuaranteesSequencing MaximumAddressSize MaximumMessageSize MessageOriented True MinimumAddressSize20 bytes PseudoStreamOriented SupportsBroadcasting True SupportsBroadcasting True SupportsDisconnectData False SupportsDisconnectData SupportsEncryption False SupportsExpeditedData SupportsCancefulClosing SupportsGuaranteedBandwidth	False False  52E-F4FC-434F-AEBB-56AA0E507EF7}]  True  False 20 bytes 64000 bytes  False False False False False

			Maximum		fer Size	False
[WinSock	]		Settable Ba		True	
			Settable Da		True	
Item	Value		Settable Flo		True	
File	c:\winnt\system32\wi	nsock.dll	Settable Pa		True	
Version	3.10		Settable Pa		True	
Size	2.80 KB (2,864 bytes)	)	Settable Sto	p Bits	True	
			Settable RI	.SD	True	
File	c:\winnt\system32\ws	ock32.dll	Supports R	LSD	True	
Version	5.00.2195.2871		Supports 16	Bit Mode	False	
Size	21.27 KB (21,776 byt	tes)	Supports S <sub>1</sub>	pecial Char	acters	False
			Baud Rate	9600		
			Bits/Byte	8		
[Ports]			Stop Bits	1		
				None		
[ Followin	g are sub-categories of	f this main category 1	Busy	0		
		2 7 1	Abort Read	/Write on I	Error	0
[Serial]			Binary Mod			
[Serial]			Continue X			0
Item	Value		CTS Outflo			
Name	COM1		Discard NU			
Status	OK		DSR Outflo	-		
PNP Devi		00501\1	DSR Sensit		0	
				-		F1-1-
	Input Buffer Size	0	DTR Flow	J.	1	Enable
	Output Buffer Size	False	EOF Chara		0	^
Settable B			Error Repla			0
Settable D			Error Repla			0
	low Control True		Event Char		0	
Settable Pa	•		Parity Chec			
	arity Check True		RTS Flow	Control Typ	pe	Enable
Settable St	top Bits True		XOff Chara	icter	19	
Settable R			XOffXMit	Threshold	512	
Supports F	RLSD True		XOn Chara	cter	17	
Supports 1	6 Bit Mode False		XOnXMit 7	Γhreshold	2048	
Supports S	Special Characters	False	XOnXOff I	nFlow Cor	ntrol	0
Baud Rate	9600		XOnXOff (	OutFlow Co	ontrol	0
Bits/Byte	8		IRQ Numb	er	3	
Stop Bits				0x02F8-0x0	02FF	
Parity	None					vers\serial.sys (62416, 5.00.2195.2780)
Busy	0					,,
	d/Write on Error	0				
	ode Enabled -1		[Parallel]			
-	XMit on XOff	0	[r araner]			
	ow Control 0	U .	Item	Value		
	ULL Bytes 0			LPT1		
	low Control 0		PNP Device		A CDI\DNID	0400\1
			FINE DEVIC	נונים .	ACPI\PNP	0400\1
DSR Sens		F 11				
DIKFIOW	Control Type	Enable	rau 1			
EOF Char			[Storage]			
	ace Character	0	F 70 11 .	,		eart to a
	acement Enabled	0	Following	, are sub-ca	itegories of	this main category ]
Event Cha						
-	ck Enabled 0		[Drives]			
	Control Type	Enable				
XOff Chai				Value		
XOffXMit	Threshold 512		Drive	A:		
XOn Char	acter 17		Description	t	3 1/2 Inch	Floppy Drive
XOnXMit	Threshold 2048					
XOnXOff	InFlow Control	0	Drive	C:		
XOnXOff	OutFlow Control	0	Description	1	Local Fixe	d Disk
IRQ Numl	per 4		Compresse		False	
I/O Port	0x03F8-0x03FF		File System		NTFS	
Driver		vers\serial.sys (62416, 5.00.2195.2780)	_	8.46 GB (9.		20 bytes)
			Free Space			• .
Name	COM2		Volume Na		,-,-,-,-,-,-,	= · ~ <i>j · • o j</i>
Status	OK		Volume Se		r	1C67EB25
PNP Devi		20501\2	Partition			
	Input Buffer Size	0	Partition Si			9,088,902,144 bytes)
	r	-		-	02 ()	, , . <del> ,</del>

Starting Offset 22256 button	1
Starting Offset 32256 bytes Drive Description Disk drive	Name Description File Type Started Start Mode
Drive Manufacturer (Standard disk drives)	State Status Error Control Accept Pause Accept Stop
Drive Model IBM-PSG ST39204LC !# SCSI Disk Device	abiosdsk Abiosdsk Not Available Kernel Driver False
Drive BytesPerSector 512	Disabled Stopped OK Ignore False False
Drive MediaLoaded True Drive MediaType Fixed hard disk media	abp480n5 abp480n5 Not Available Kernel Driver False Disabled Stopped OK Normal False False
Drive Partitions 1	acpi Microsoft ACPI Driver c:\winnt\system32\drivers\acpi.sys
Drive SCSIBus 0	Kernel Driver True Boot Running OK Normal
Drive SCSILogicalUnit 0	False True
Drive SCSIPort 2	acpiec ACPIEC c:\winnt\system32\drivers\acpiec.sys Kernel
Drive SCSITargetId 0	Driver False Disabled Stopped OK Normal False
Drive SectorsPerTrack 63 Drive Size 9097159680 bytes	False adpu160m adpu160m c:\winnt\system32\drivers\adpu160m.sys Kernel
Drive TotalCylinders 1106	Driver True Boot Running OK Normal False
Drive TotalSectors 17767890	True
Drive TotalTracks 282030	afd AFD Networking Support Environment
Drive TracksPerCylinder 255	c:\winnt\system32\drivers\afd.sysKernel Driver True Auto
Drive E:	Running OK Normal False True aha154x Aha154x Not Available Kernel Driver False
Description Network Connection	Disabled Stopped OK Normal False False
Provider Name \\192.168.132.253\e\$	aic116x aic116x Not Available Kernel Driver False
	Disabled Stopped OK Normal False False
	aic78u2 aic78u2 Not Available Kernel Driver False
[SCSI]	Disabled Stopped OK Normal False False
Item Value	aic78xx aic78xx Not Available Kernel Driver False Disabled Stopped OK Normal False False
Name Adaptec AIC-7892 - Ultra160 SCSI	amiOnt amiOnt Not Available Kernel Driver False
Caption Adaptec AIC-7892 - Ultra160 SCSI	Disabled Stopped OK Normal False False
Driver adpu160m	amsint amsint Not Available Kernel Driver False
Status OK	Disabled Stopped OK Normal False False
PNP Device ID PCI/VEN 9005&DEV 008F&SUBSYS 008F1014&REV 02\3&13C0B0C5&	asc asc Not Available Kernel Driver False Disabled Stopped OK Normal False False
0&18	asc3350p asc3350p Not Available Kernel Driver False
Device ID	Disabled Stopped OK Normal False False
PCI\VEN_9005&DEV_008F&SUBSYS_008F1014&REV_02\3&13C0B0C5&	asc3550 asc3550 Not Available Kernel Driver False
0&18	Disabled Stopped OK Normal False False
Device Map Not Available Index Not Available	asyncmac RAS Asynchronous Media Driver c:\winnt\system32\drivers\asyncmac.sys Kernel Driver False
Max Number Controlled Not Available	Manual Stopped OK Normal False False
IRQ Number 28	atapi Standard IDE/ESDI Hard Disk Controller
I/O Port 0x3100-0x31FF	c:\winnt\system32\drivers\atapi.sys Kernel Driver True
Driver c:\winnt\system32\drivers\adpu160m.sys (88000, d4.10 (4.10.4000))	Boot Running OK Normal False True
	atdisk Atdisk Not Available Kernel Driver False Disabled Stopped OK Ignore False False
[Printing]	atmarpc ATM ARP Client Protocol
[	c:\winnt\system32\drivers\atmarpc.sys Kernel Driver False
Name Port Name Server Name	Manual Stopped OK Normal False False
No printing information	audstub Audio Stub Driver c:\winnt\system32\drivers\audstub.sys
[Problem Devices]	Kernel Driver True Manual Running OK Normal False True
[Problem Devices]	beep Beep c:\winnt\system32\drivers\beep.sys Kernel
Device PNP Device ID Error Code	Driver True System Running OK Normal False
Not Available ACPI\IBM37D1\4&389C1010&0 28	True
HIGH	buslogic BusLogic Not Available Kernel Driver False
[USB]	Disabled Stopped OK Normal False False cd20xrnt cd20xrnt Not Available Kernel Driver False
Device PNP Device ID	Disabled Stopped OK Normal False False
Standard OpenHCD USB Host Controller	cdaudio Cdaudio c:\winnt\system32\drivers\cdaudio.sys Kernel
PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_04\3&267A616A&	Driver False System Stopped OK Ignore False
0&7A	False
USB Root Hub USB\ROOT_HUB\4&372644EA&0	cdfs Cdfs c:\winnt\system32\drivers\cdfs.sys File System Driver True Disabled Running OK Normal False
[Software Environment]	Driver True Disabled Running OK Normal False True
[2000	cdrom CD-ROM Driver c:\winnt\system32\drivers\cdrom.sys
[ Following are sub-categories of this main category ]	Kernel Driver True System Running OK Normal
	False True
[Drivers]	

changer Changer Not Available Kernel Driver False	ipfilterdriver IP Traffic Filter Driver
System Stopped OK Ignore False False	c:\winnt\system32\drivers\ipfltdrv.sys Kernel Driver False
cpqarray Cpqarray Not Available Kernel Driver False	Manual Stopped OK Normal False False
Disabled Stopped OK Normal False False	ipinip IP in IP Tunnel Driverc:\winnt\system32\drivers\ipinip.sys
cpqarry2 cpqarry2 Not Available Kernel Driver False	Kernel Driver False Manual Stopped OK Normal
Disabled Stopped OK Normal False False	False False
cpqfcalm cpqfcalm Not Available Kernel Driver False	ipnat IP Network Address Translator c:\winnt\system32\drivers\ipnat.sys
Disabled Stopped OK Normal False False cpqfws2e cpqfws2e Not Available Kernel Driver False	Kernel Driver False Manual Stopped OK Normal False False
Disabled Stopped OK Normal False False	ipsec IPSEC driver c:\winnt\system32\drivers\ipsec.sys
dac960nt dac960nt Not Available Kernel Driver False	Kernel Driver True Manual Running OK Normal
Disabled Stopped OK Normal False False	False True
deckzpsx deckzpsx Not Available Kernel Driver False	ipsraidn ipsraidn Not Available Kernel Driver False
Disabled Stopped OK Normal False False	Disabled Stopped OK Normal False False
dfsdriver DfsDriver c:\winnt\system32\drivers\dfs.sysFile System Driver	isapnp PnP ISA/EISA Bus Driver
True Boot Running OK Normal False True	c:\winnt\system32\drivers\isapnp.sys Kernel Driver True
disk Disk Driver c:\winnt\system32\drivers\disk.sys	Boot Running OK Critical False True
Kernel Driver True Boot Running OK Normal	kbdclass Keyboard Class Driver
False True diskperf Diskperf c:\winnt\system32\drivers\diskperf.sys Kernel	c:\winnt\system32\drivers\kbdclass.sys Kernel Driver True System Running OK Normal False True
Driver True Boot Running OK Normal False	ksecdd KSecDD c:\winnt\system32\drivers\ksecdd.sys Kernel
True	Driver True Boot Running OK Normal False
dmboot dmboot c:\winnt\system32\drivers\dmboot.sys Kernel	True
Driver False Disabled Stopped OK Normal False	lbrtfdc lbrtfdc Not Available Kernel Driver False
False	System Stopped OK Ignore False False
dmio Logical Disk Manager Driver	lp6nds35 lp6nds35 Not Available Kernel Driver False
c:\winnt\system32\drivers\dmio.sys Kernel Driver True	Disabled Stopped OK Normal False False
Boot Running OK Normal False True	mnmdd mnmdd c:\winnt\system32\drivers\mnmdd.sys Kernel
dmload dmload c:\winnt\system32\drivers\dmload.sys Kernel	Driver True System Running OK Ignore False
Driver True Boot Running OK Normal False True	True
e100b Intel(R) PRO Adapter Driver	modem Modem c:\winnt\system32\drivers\modem.sys Kernel Driver False Manual Stopped OK Ignore False
c:\winnt\system32\drivers\e100bnt5.sys Kernel Driver True	False
Manual Running OK Normal False True	mouclass Mouse Class Driver c:\winnt\system32\drivers\mouclass.sys
efs EFS c:\winnt\system32\drivers\efs.sys File System Driver	
	Kernel Driver True System Running OK Normal
True Disabled Running OK Normal False True	False True System Running OK Norman
	False True mountmgr MountMgrc:\winnt\system32\drivers\mountmgr.sys Kernel
True Disabled Running OK Normal False True fastfat Fastfat c:\winnt\system32\drivers\fastfat.sys File Syst Driver True Disabled Running OK Normal False	False True mountmgr MountMgr c:\winnt\system32\drivers\mountmgr.sys Kernel Driver True Boot Running OK Normal False
True Disabled Running OK Normal False True fastfat Fastfat c:\winnt\system32\drivers\fastfat.sys File Syst Driver True Disabled Running OK Normal False True	False True mountmgr MountMgr c:\winnt\system32\drivers\mountmgr.sys Kernel Driver True Boot Running OK Normal False True
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ptilink	Direct Par	allel Link I	Oriver			
C.\WIIIII\S	ystem32\dr			Kernel Dr	iver	True
Manual	Running	OK	Normal	False	True	
q11080	q11080	Not Avail	able	Kernel Dr	iver	False
Disabled	Stopped	OK	Normal	False	False	
q110wnt	Ql10wnt	Not Avail	able	Kernel Dr	iver	False
Disabled	Stopped		Normal	False	False	
q11240	q11240	Not Avail	able	Kernel Dr		False
Disabled	Stopped	OK	Normal	False	False	
q12100	ql2100	Not Avail		Kernel Dr	iver	False
Disabled	Stopped	OK	Normal	False	False	
rasacd	Remote A	ccess Auto	Connection	n Driver		
c:\winnt\s	ystem32\dr	ivers\rasacc	l.sys	Kernel Dr	iver	True
System	Running		Normal	False	True	
rasl2tp	WAN Mir	niport (L2T	P)			
c:\winnt\s	ystem32\dr			Kernel Dr	iver	True
Manual	Running	OK	Normal	False	True	
raspti	Direct Par	allel	c:\winnt\s	ystem32\dri	ivers\raspti.	.sys
Kernel Dr	iver	True	Manual	Running		Normal
False	True					
rca	Microsoft	Streaming	Network Ra	aw Channel	Access	
c:\winnt\s			s Kernel Dr		False	Manual
Stopped	OK	Normal	False	False		
rdbss	Rdbss		ystem32\dri	ivers\rdbss.	SVS	File System
Driver	True		Running		Normal	False
True		J	0			
rdpwd	RDPWD	c:\winnt\s	ystem32\dri	ivers\rdpwd	l.svs	Kernel
Driver	False	Manual	Stopped		Ignore	False
False			FF		8	
redbook	Digital CI	) Audio Pla	yback Filte	r Driver		
	ystem32\dr			Kernel Dr	iver	False
System	Stopped		Normal	False	False	
s3inc	S3Inc		ystem32\dri	ivers\s3sav4	4m.svs	Kernel
Driver	True		Running		Ignore	False
True			0		Ü	
serenum	Serenum I	Filter Drive	r c:\winnt\s	ystem32\dri	ivers\serenu	ım.sys
Kernel Dr		True	Manual	Running		Normal
False	True					
serial					ivere\cerial	
	Serial por	driver	c:\winnt\s	ystem32\dri	iveis (seriar.	sys
Kernel Dr	Serial portiver	driver True	c:\winnt\system	•		sys Ignore
Kernel Dr False				•		•
False	iver True	True	System	Running	OK	•
	river	True c:\winnt\s	System  ystem32\dri	Running ivers\sflopp	OK	Ignore
False sfloppy	river True Sfloppy	True	System	Running ivers\sflopp	OK oy.sys	Ignore Kernel
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False sfloppy Driver False sglfb	True Sfloppy False sglfb	True c:\winnt\s	System  ystem32\dri Stopped	Running ivers\sflopp	OK by.sys Ignore	Ignore Kernel
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c:\winnt\system32\in				10:26:26 AM Microsoft Corporation
rpcref.dll 5.00.0984	4.27 KB (4,368 bytes) 9/24/2001	10:27:35 A	M	c:\winnt\system32\mstask.exe
Microsoft Corporatio				regsvc.exe 5.00.2195.2104 65.27 KB (66,832 bytes) 9/24/2001
	119.77 KB (122,640 bytes)	9/24/2001		10:26:33 AM Microsoft Corporation
AM Microsoft	Corporation c:\winnt\sv	ystem32\iis	rtl.dll	c:\winnt\system32\regsvc.exe
inetinfo.exe	5.00.0984 14.27 KB (14,608 byt	tes)	9/24/2001	nmssvc.exe 1.64.0.0 1012.00 KB (1,036,288 bytes) 10/8/2001
10:27:34 AM	Microsoft Corporation			4:31:07 PM Intel Corporation c:\winnt\system32\nmssvc.exe
c:\winnt\system32\in				llsrpc.dll 5.00.2149.1 45.77 KB (46,864 bytes) 12/7/1999
netui1.dll 5.00.2134		bytes)	12/7/1999	7:00:00 AM Microsoft Corporation
7:00:00 AM	Microsoft Corporation			c:\winnt\system32\llsrpc.dll
c:\winnt\system32\ne				llssrv.exe 5.00.2195.2649 114.27 KB (117,008 bytes) 5/4/2001
netui0.dll 5.00.2134	( )	tes)	12/7/1999	12:05:02 PM Microsoft Corporation
7:00:00 AM	Microsoft Corporation			c:\winnt\system32\llssrv.exe
c:\winnt\system32\ne		(2( 1121 )		netshell.dll5.00.2195.2779 457.27 KB (468,240 bytes) 9/24/2001
ntlanman.dll		(36,112 byt	tes)	10:26:28 AM Microsoft Corporation
12/7/1999 7:00:00 A	1	n		c:\winnt\system32\netshell.dll netman.dll 5.00.2195.2779
c:\winnt\system32\nt wshnetbs.dll		7,952 bytes	12/7/1000	netman.dll 5.00.2195.2779 89.27 KB (91,408 bytes) 9/24/2001 10:26:28 AM Microsoft Corporation
7:00:00 AM	Microsoft Corporation	1,932 bytes	)12///1999	c:\winnt\system32\netman.dll
c:\winnt\system32\w				rasdlg.dll 5.00.2195.2671 514.27 KB (526,608 bytes) 12/7/1999
ntmarta.dll 5.00.2195		vtes)	9/24/2001	7:00:00 AM Microsoft Corporation
10:26:29 AM	Microsoft Corporation	, (65)	<i>312.</i> 12001	c:\winnt\system32\rasdlg.dll
c:\winnt\system32\nt				netcfgx.dll 5.00.2195.2228 534.77 KB (547,600 bytes) 9/24/2001
provthrd.dll	1.50.1085.0000 68.07 KB	(69,708 byt	tes)	10:26:28 AM Microsoft Corporation
9/17/2001 2:09:22 PI	M Microsoft Corporation	n	<i></i>	c:\winnt\system32\netcfgx.dll
c:\winnt\system32\wi	bem\provthrd.dll			rasmans.dll 5.00.2195.2728 147.27 KB (150,800 bytes)
ntevt.dll 1.50.1085	.0000 192.06 KB (196,669 l	bytes)	12/7/1999	9/24/2001 10:26:32 AM Microsoft Corporation
7:00:00 AM	Microsoft Corporation			c:\winnt\system32\rasmans.dll
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perfos.dll 5.00.2155		tes)	12/7/1999	9/24/2001 10:26:29 AM Microsoft Corporation
7:00:00 AM	Microsoft Corporation			c:\winnt\system32\ntmsdba.dll
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7:00:00 AM	Microsoft Corporation			c:\winnt\system32\sens.dll
c:\winnt\system32\ps				iashlpr.dll 5.00.2184.1 33.27 KB (34,064 bytes) 12/7/1999
framedyn.dll		3 (167,992 1	bytes)	7:00:00 AM Microsoft Corporation
12/7/1999 7:00:00 A		n		c:\winnt\system32\iashlpr.dll
c:\winnt\system32\wi		1 072 222 1	vitaa)	iasacct.dll 5.00.2134.1 28.27 KB (28,944 bytes) 12/7/1999
cimwin32.dll 9/24/2001 10:26:41 A		1,073,232 է	yies)	7:00:00 AM Microsoft Corporation
c:\winnt\system32\w	•	11		c:\winnt\system32\iasacct.dll iasuserr.dll5.00.2134.1 25.77 KB (26,384 bytes) 12/7/1999
wbemsvc.dll		(41,036 byt	es)	7:00:00 AM Microsoft Corporation
9/24/2001 10:26:43				c:\winnt\system32\iasuserr.dll
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iasnap.dll 5.00.2195.2104 58.77 KB (60,176 bytes) 9/24/2001	mtxoci.dll 2000.2.3471.1 101.77 KB (104,208 bytes) 9/24/2001
10:26:16 AM Microsoft Corporation	10:26:27 AM Microsoft Corporation
c:\winnt\system32\iasnap.dll	c:\winnt\system32\mtxoci.dll
iaspipe.dll 5.00.2134.1 41.77 KB (42,768 bytes) 12/7/1999	resutils.dll 5.00.2195.2787 39.77 KB (40,720 bytes) 9/24/2001
7:00:00 AM Microsoft Corporation	10:26:33 AM Microsoft Corporation
c:\winnt\system32\iaspipe.dll	c:\winnt\system32\resutils.dll
expsrv.dll 6.0.8540 370.27 KB (379,152 bytes) 9/24/2001 10:26:16	clusapi.dll 5.00.2195.2104 54.27 KB (55,568 bytes) 9/24/2001
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vbajet32.dll 6.1.8268 30.27 KB (30,992 bytes) 9/24/2001	c:\winnt\system32\clusapi.dll
10:26:37 AM Microsoft Corporation	msvcp50.dll 5.00.7051 552.50 KB (565,760 bytes) 12/7/1999
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msjtes40.dll 4.00.4229.0 236.27 KB (241,936 bytes)	c:\winnt\system32\msvcp50.dll
9/24/2001 10:26:25 AM Microsoft Corporation	xolehlp.dll 1999.9.3421.3 17.27 KB (17,680 bytes) 9/17/2001
c:\winnt\system32\msjtes40.dll	10:04:53 AM Microsoft Corporation
oledb32r.dll 2.61.7326.0 68.27 KB (69,904 bytes)	c:\winnt\system32\xolehlp.dll
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msjint40.dll 4.00.2927.2 148.27 KB (151,824 bytes)	c:\winnt\system32\txfaux.dll
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12:05:02 PM Microsoft Corporation	12/7/1999 7:00:00 AM Microsoft Corporation
c:\winnt\system32\rsabase.dll	c:\winnt\system32\cryptsvc.dll
schannel.dll 5.00.2195.2922 138.27 KB (141,584 bytes)	cryptdll.dll5.00.2135.1 41.27 KB (42,256 bytes) 12/7/1999
5/4/2001 12:05:02 PM Microsoft Corporation	7:00:00 AM Microsoft Corporation
c:\winnt\system32\schannel.dll	c:\winnt\system32\cryptdll.dll
netlogon.dll 5.00.2195.2865 357.77 KB (366,352 bytes)	wkssvc.dll 5.00.2195.2780 95.27 KB (97,552 bytes) 12/7/1999
9/24/2001 10:26:28 AM Microsoft Corporation	7:00:00 AM Microsoft Corporation
c:\winnt\system32\netlogon.dll	c:\winnt\system32\wkssvc.dll
kerberos.dll 5.00.2195.2913 198.77 KB (203,536 bytes)	srvsvc.dll 5.00.2195.2904 79.27 KB (81,168 bytes) 12/7/1999 7:00:00 AM Microsoft Corporation
9/24/2001 10:26:19 AM Microsoft Corporation c:\winnt\system32\kerberos.dll	7:00:00 AM Microsoft Corporation c:\winnt\system32\srvsvc.dll
msprivs.dll5.00.2154.1 41.50 KB (42,496 bytes) 12/7/1999	cfgmgr32.dll 5.00.2134.1 16.77 KB (17,168 bytes)
7:00:00 AM Microsoft Corporation	12/7/1999 7:00:00 AM Microsoft Corporation
c:\winnt\system32\msprivs.dll	c:\winnt\system32\cfgmgr32.dll
samsrv.dll 5.00.2195.2918 369.77 KB (378,640 bytes) 12/7/1999	dmserver.dll 2195.2778.297.3 11.77 KB (12,048 bytes)
7:00:00 AM Microsoft Corporation	9/24/2001 10:26:14 AM VERITAS Software Corp.
c:\winnt\system32\samsrv.dll	c:\winnt\system32\dmserver.dll
lsasrv.dll 5.00.2195.2964 492.77 KB (504,592 bytes) 12/7/1999	winsta.dll 5.00.2195.2386 36.77 KB (37,648 bytes) 9/24/2001
7:00:00 AM Microsoft Corporation	10:26:38 AM Microsoft Corporation
c:\winnt\system32\lsasrv.dll	c:\winnt\system32\winsta.dll
lsass.exe 5.00.2195.2964 32.77 KB (33,552 bytes) 12/7/1999	lmhsvc.dll 5.00.2195.2778 9.77 KB (10,000 bytes) 12/7/1999
7:00:00 AM Microsoft Corporation	7:00:00 AM Microsoft Corporation
c:\winnt\system32\lsass.exe	c:\winnt\system32\lmhsvc.dll

dnsrslvr.dll 5.00.2195.2778 88.77 KB (90,896 bytes) 9/24/2001 10:26:14 AM Microsoft Corporation	cscdll.dll 5.00.2195.2401 98.27 KB (100,624 bytes) 9/24/2001 10:26:12 AM Microsoft Corporation 9/24/2001
c:\winnt\system32\dnsrslvr.dll	c:\winnt\system32\cscdll.dll
tapi32.dll 5.00.2182.1 123.27 KB (126,224 bytes) 12/7/1999	lz32.dll 5.00.2134.1 9.77 KB (10,000 bytes) 12/7/1999
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7:00:00 AM Microsoft Corporation	7:00:00 AM Microsoft Corporation
c:\winnt\system32\tapi32.dll	c:\winnt\system32\lz32.dll
rasman.dll 5.00.2195.2780 54.77 KB (56,080 bytes) 12/7/1999	version.dll 5.00.2134.1 15.77 KB (16,144 bytes) 12/7/1999
7:00:00 AM Microsoft Corporation	7:00:00 AM Microsoft Corporation
c:\winnt\system32\rasman.dll	c:\winnt\system32\version.dll
rasapi32.dll 5.00.2195.2671 189.77 KB (194,320 bytes)	rsaenh.dll 5.00.2195.2228 130.77 KB (133,904 bytes) 9/24/2001
12/7/1999 7:00:00 AM Microsoft Corporation	10:27:28 AM Microsoft Corporation
<u>.</u>	
c:\winnt\system32\rasapi32.dll	c:\winnt\system32\rsaenh.dll
rtutils.dll 5.00.2168.1 43.77 KB (44,816 bytes) 12/7/1999	mscat32.dll 5.131.2134.1 7.77 KB (7,952 bytes) 12/7/1999
7:00:00 AM Microsoft Corporation	7:00:00 AM Microsoft Corporation
c:\winnt\system32\rtutils.dll	c:\winnt\system32\mscat32.dll
adsldpc.dll 5.00.2195.2842 127.27 KB (130,320 bytes) 9/24/2001	ole32.dll 5.00.2195.2887 969.77 KB (993,040 bytes) 9/24/2001
10:26:09 AM Microsoft Corporation	
c:\winnt\system32\adsldpc.dll	c:\winnt\system32\ole32.dll
activeds.dll 5.00.2195.2778 174.77 KB (178,960 bytes)	imagehlp.dll 5.00.2195.2778 125.77 KB (128,784 bytes)
9/24/2001 10:26:02 AM Microsoft Corporation	5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\activeds.dll	c:\winnt\system32\imagehlp.dll
mprapi.dll 5.00.2181.1 79.27 KB (81,168 bytes) 12/7/1999	msasn1.dll 5.00.2134.1 51.27 KB (52,496 bytes) 12/7/1999
1 1	
7:00:00 AM Microsoft Corporation	7:00:00 AM Microsoft Corporation
c:\winnt\system32\mprapi.dll	c:\winnt\system32\msasn1.dll
iphlpapi.dll 5.00.2173.2 67.77 KB (69,392 bytes)	crypt32.dll 5.131.2195.2833 451.27 KB (462,096 bytes) 9/24/2001
12/7/1999 7:00:00 AM Microsoft Corporation	10:26:12 AM Microsoft Corporation
c:\winnt\system32\iphlpapi.dll	c:\winnt\system32\crypt32.dll
icmp.dll 5.00.2134.1 7.27 KB (7,440 bytes) 12/7/1999 7:00:00 AM	wintrust.dll 5.131.2195.2779 162.27 KB (166,160 bytes)
Microsoft Corporation c:\winnt\system32\icmp.dll	9/24/2001 10:26:38 AM Microsoft Corporation
dhcpcsvc.dll 5.00.2195.2778 88.77 KB (90,896 bytes)	c:\winnt\system32\wintrust.dll
12/7/1999 7:00:00 AM Microsoft Corporation	setupapi.dll 5.00.2195.2663 555.77 KB (569,104 bytes)
c:\winnt\system32\dhcpcsvc.dll	12/7/1999 7:00:00 AM Microsoft Corporation
eventlog.dll 5.00.2178.1 43.77 KB (44,816 bytes)	c:\winnt\system32\setupapi.dll
12/7/1999 7:00:00 AM Microsoft Corporation	winmm.dll 5.00.2161.1 184.77 KB (189,200 bytes) 12/7/1999
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
c:\winnt\system32\eventlog.dll	7:00:00 AM Microsoft Corporation
ntdsapi.dll 5.00.2195.2661 55.77 KB (57,104 bytes) 9/24/2001	c:\winnt\system32\winmm.dll
10:26:29 AM Microsoft Corporation	comctl32.dll 5.81 537.77 KB (550,672 bytes) 12/7/1999
c:\winnt\system32\ntdsapi.dll	7:00:00 AM Microsoft Corporation
scesrv.dll 5.00.2195.2780 226.27 KB (231,696 bytes) 9/24/2001	c:\winnt\system32\comctl32.dll
10:26:33 AM Microsoft Corporation	shlwapi.dll5.00.3315.1000 282.77 KB (289,552 bytes) 9/24/2001
c:\winnt\system32\scesrv.dll	10:26:35 AM Microsoft Corporation
umpnpmgr.dll 5.00.2182.1 86.27 KB (88,336 bytes)	c:\winnt\system32\shlwapi.dll
12/7/1999 7:00:00 AM Microsoft Corporation	shell32.dll 5.00.3315.2902 2.25 MB (2,359,056 bytes) 9/24/2001
c:\winnt\system32\umpnpmgr.dll	10:26:35 AM Microsoft Corporation
services.exe 5.00.2195.2780 86.77 KB (88,848 bytes)	c:\winnt\system32\shell32.dll
12/7/1999 7:00:00 AM Microsoft Corporation	msgina.dll 5.00.2195.2779 324.27 KB (332,048 bytes) 12/7/1999
1	7:00:00 AM Microsoft Corporation
c:\winnt\system32\services.exe	
msv1_0.dll5.00.2195.2900 111.77 KB (114,448 bytes) 12/7/1999	c:\winnt\system32\msgina.dll
7:00:00 AM Microsoft Corporation	wsock32.dll 5.00.2195.2871 21.27 KB (21,776 bytes)
c:\winnt\system32\msv1_0.dll	9/24/2001 10:26:39 AM Microsoft Corporation
clbcatq.dll 2000.2.3471.1 496.77 KB (508,688 bytes) 9/24/2001	c:\winnt\system32\wsock32.dll
10:26:11 AM Microsoft Corporation	dnsapi.dll 5.00.2195.2785 130.77 KB (133,904 bytes) 9/24/2001
ı	10:26:14 AM Microsoft Corporation
c:\winnt\system32\clbcatq.dll	
oleaut32.dll 2.40.4517 612.27 KB (626,960 bytes) 12/7/1999	c:\winnt\system32\dnsapi.dll
7:00:00 AM Microsoft Corporation	wldap32.dll 5.00.2195.2797 125.27 KB (128,272 bytes)
c:\winnt\system32\oleaut32.dll	9/24/2001 10:26:38 AM Microsoft Corporation
cscui.dll 5.00.2195.2959 228.27 KB (233,744 bytes) 9/24/2001	c:\winnt\system32\wldap32.dll
10:26:12 AM Microsoft Corporation	ws2help.dll 5.00.2134.1 17.77 KB (18,192 bytes)
c:\winnt\system32\cscui.dll	12/7/1999 7:00:00 AM Microsoft Corporation
winspool.drv 5.00.2195.2780 109.77 KB (112,400 bytes)	c:\winnt\system32\ws2help.dll
12/7/1999 7:00:00 AM Microsoft Corporation	ws2_32.dll5.00.2195.2780 67.77 KB (69,392 bytes) 9/24/2001
c:\winnt\system32\winspool.drv	10:26:39 AM Microsoft Corporation
winscard.dll 5.00.2134.1 77.27 KB (79,120 bytes)	c:\winnt\system32\ws2 32.dll
12/7/1999 7:00:00 AM Microsoft Corporation	samlib.dll 5.00.2195.2780 49.77 KB (50,960 bytes) 12/7/1999
c:\winnt\system32\winscard.dll	7:00:00 AM Microsoft Corporation
	1
wlnotify.dll 5.00.2195.2780 53.77 KB (55,056 bytes)	c:\winnt\system32\samlib.dll
9/24/2001 10:26:39 AM Microsoft Corporation	
c:\winnt\system32\wlnotify.dll	

netrap.dll 5.00.2134.1 11.27 KB (11,536 bytes)	12/7/1999	DHCP Client Dhcp Running Auto Share Process
7:00:00 AM Microsoft Corporation		c:\winnt\system32\services.exe Normal LocalSystem 0
c:\winnt\system32\netrap.dll		Logical Disk Manager Administrative Service dmadmin Stopped
netapi32.dll 5.00.2195.2808 303.77 KB (311,056	bytes)	Manual Share Process c:\winnt\system32\dmadmin.exe /com
9/24/2001 10:26:28 AM Microsoft Corporation		Normal LocalSystem 0
c:\winnt\system32\netapi32.dll		Logical Disk Managerdmserver Running Auto Share Process
profmap.dll 5.00.2181.1 29.27 KB (29,968 by	rtes)	c:\winnt\system32\services.exe Normal LocalSystem 0
12/7/1999 7:00:00 AM Microsoft Corporation		DNS Client Dnscache Running Auto Share Process
c:\winnt\system32\profmap.dll secur32.dll5.00.2195.2862 46.77 KB (47.888 bytes)	9/24/2001	c:\winnt\system32\services.exe Normal LocalSystem 0 Event Log Eventlog Running Auto Share Process
10:26:34 AM Microsoft Corporation	9/24/2001	Event Log Eventlog Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0
c:\winnt\system32\secur32.dll		COM+ Event System EventSystem Running Manual Share
sfc.dll 5.00.2195.2896 92.11 KB (94,320 bytes)	9/24/2001	Process c:\winnt\system32\svchost.exe -k netsvcs Normal
10:26:34 AM Microsoft Corporation	9/24/2001	LocalSystem 0
c:\winnt\system32\sfc.dll		Fax Service Fax Stopped Manual Own Process
nddeapi.dll5.00.2137.1 15.27 KB (15,632 bytes)	12/7/1999	c:\winnt\system32\faxsvc.exe Normal LocalSystem 0
7:00:00 AM Microsoft Corporation	12///1999	Internet Authentication Service IAS Running Auto Share
c:\winnt\system32\nddeapi.dll		Process c:\winnt\system32\svchost.exe -k netsvcs Normal
userenv.dll5.00.2195.2780 361.77 KB (370,448 bytes)	12/7/1999	LocalSystem 0
7:00:00 AM Microsoft Corporation		IIS Admin Service IISADMIN Running Auto Share
c:\winnt\system32\userenv.dll		Process c:\winnt\system32\inetsrv\inetinfo.exe Normal
user32.dll 5.00.2195.2821 392.77 KB (402,192 bytes)	12/7/1999	LocalSystem 0
7:00:00 AM Microsoft Corporation		Intersite Messaging IsmServ Stopped Disabled Own Process
c:\winnt\system32\user32.dll		c:\winnt\system32\ismserv.exe Normal LocalSystem 0
gdi32.dll 5.00.2195.2778 228.77 KB (234,256 bytes)	12/7/1999	Kerberos Key Distribution Center kdc Stopped Disabled
7:00:00 AM Microsoft Corporation		Share Process c:\winnt\system32\lsass.exe Normal
c:\winnt\system32\gdi32.dll		LocalSystem 0
rpcrt4.dll 5.00.2195.2832 437.27 KB (447,760 bytes)	9/24/2001	Server lanmanserver Running Auto Share Process
10:26:33 AM Microsoft Corporation		c:\winnt\system32\services.exe Normal LocalSystem 0
c:\winnt\system32\rpcrt4.dll		Workstation lanmanworkstation Running Auto Share
advapi32.dll 5.00.2195.2867 351.77 KB (360,208	bytes)	Process c:\winnt\system32\services.exe Normal LocalSystem 0
12/7/1999 7:00:00 AM Microsoft Corporation		License Logging Service License Service Running Auto
c:\winnt\system32\advapi32.dll		Own Process c:\winnt\system32\llssrv.exe Normal
	hytec)	LocalSystem 0
kernel32.dll 5.00.2195.2778 714.77 KB (731,920	bytes)	
12/7/1999 7:00:00 AM Microsoft Corporation	bytes)	TCP/IP NetBIOS Helper Service LmHosts Running Auto Share
12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\kernel32.dll	,	TCP/IP NetBIOS Helper Service LmHosts Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0
12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\kernel32.dll msvcrt.dll 6.10.8924.0 284.05 KB (290,869 bytes)	5/4/2001	TCP/IP NetBIOS Helper Service LmHosts Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0 Messenger Messenger Running Auto Share Process
12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\kernel32.dll msvcrt.dll 6.10.8924.0 284.05 KB (290,869 bytes) 12:05:02 PM Microsoft Corporation	,	TCP/IP NetBIOS Helper Service LmHosts Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0
12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\kernel32.dll msvcrt.dll 6.10.8924.0 284.05 KB (290,869 bytes) 12:05:02 PM Microsoft Corporation c:\winnt\system32\msvcrt.dll	5/4/2001	TCP/IP NetBIOS Helper Service LmHosts Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  NetMeeting Remote Desktop Sharing mnmsrvc Stopped Manual
12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\kernel32.dll       284.05 KB (290,869 bytes)         12:05:02 PM       Microsoft Corporation         c:\winnt\system32\msvcrt.dll       173.77 KB (177,936	5/4/2001	TCP/IP NetBIOS Helper Service LmHosts Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  NetMeeting Remote Desktop Sharing mnmsrvc Stopped Manual Own Process c:\winnt\system32\mmsrvc.exe Normal
12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\kernel32.dll       284.05 KB (290,869 bytes)         12:05:02 PM       Microsoft Corporation         c:\winnt\system32\msvcrt.dll       vinlogon.exe         5.00.2195.2953       173.77 KB (177,936         12/7/1999 7:00:00 AM       Microsoft Corporation	5/4/2001	TCP/IP NetBIOS Helper Service LmHosts Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  NetMeeting Remote Desktop Sharing mnmsrvc Stopped Manual Own Process c:\winnt\system32\mmsrvc.exe Normal LocalSystem 0
12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\kernel32.dll       284.05 KB (290,869 bytes)         12:05:02 PM       Microsoft Corporation         c:\winnt\system32\msvcrt.dll       winlogon.exe         5.00.2195.2953       173.77 KB (177,936         12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\winlogon.exe       Microsoft Corporation	5/4/2001 bytes)	TCP/IP NetBIOS Helper Service LmHosts Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  NetMeeting Remote Desktop Sharing mnmsrvc Stopped Manual Own Process c:\winnt\system32\mmsrvc.exe Normal LocalSystem 0  Distributed Transaction Coordinator MSDTC Running Auto Share Normal
12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\kernel32.dll       284.05 KB (290,869 bytes)         12:05:02 PM       Microsoft Corporation         c:\winnt\system32\msvcrt.dll       winlogon.exe         5.00.2195.2953       173.77 KB (177,936         12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\winlogon.exe       948.27 KB (971,024 bytes)	5/4/2001	TCP/IP NetBIOS Helper Service LmHosts Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  NetMeeting Remote Desktop Sharing mnmsrvc Stopped Manual Own Process c:\winnt\system32\mmmsrvc.exe Normal LocalSystem 0  Distributed Transaction Coordinator MSDTC Running Auto Own Process c:\winnt\system32\msdarter Normal N
12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\kernel32.dll       284.05 KB (290,869 bytes)         12:05:02 PM       Microsoft Corporation         c:\winnt\system32\msvcrt.dll       winlogon.exe         5.00.2195.2953       173.77 KB (177,936         12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\winlogon.exe       \$48.27 KB (971,024 bytes)         10:26:34 AM       Microsoft Corporation	5/4/2001 bytes)	TCP/IP NetBIOS Helper Service LmHosts Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  NetMeeting Remote Desktop Sharing mnmsrvc Stopped Manual Own Process c:\winnt\system32\mmmsrvc.exe Normal LocalSystem 0  Distributed Transaction Coordinator MSDTC Running Auto Own Process c:\winnt\system32\msdarker Normal LocalSystem 0
12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\kernel32.dll       284.05 KB (290,869 bytes)         12:05:02 PM       Microsoft Corporation         c:\winnt\system32\msvcrt.dll       winlogon.exe         5.00.2195.2953       173.77 KB (177,936         12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\winlogon.exe       \$fcfiles.dll 5.00.2195.2967       948.27 KB (971,024 bytes)         10:26:34 AM       Microsoft Corporation         c:\winnt\system32\sfcfiles.dll	5/4/2001 bytes) 9/24/2001	TCP/IP NetBIOS Helper Service LmHosts Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  NetMeeting Remote Desktop Sharing mnmsrvc Stopped Manual Own Process c:\winnt\system32\mmmsrvc.exe Normal LocalSystem 0  Distributed Transaction Coordinator MSDTC Running Auto Own Process c:\winnt\system32\msdarker Normal N
12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\kernel32.dll msvcrt.dll 6.10.8924.0 284.05 KB (290,869 bytes) 12:05:02 PM Microsoft Corporation c:\winnt\system32\msvcrt.dll winlogon.exe 5.00.2195.2953 173.77 KB (177,936 12/7/1999 7:00:00 AM Microsoft Corporation c:\winnt\system32\winlogon.exe sfcfiles.dll 5.00.2195.2967 948.27 KB (971,024 bytes) 10:26:34 AM Microsoft Corporation c:\winnt\system32\sigma (Corporation)	5/4/2001 bytes)	TCP/IP NetBIOS Helper Service LmHosts Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  NetMeeting Remote Desktop Sharing mnmsrvc Stopped Manual Own Process c:\winnt\system32\mmsrvc.exe Normal LocalSystem 0  Distributed Transaction Coordinator MSDTC Running Auto Own Process c:\winnt\system32\mstdc.exe Normal LocalSystem 0  Windows Installer MSIServer Stopped Manual Share Process c:\winnt\system32\msdc.exe /v Normal LocalSystem 0
12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\kernel32.dll       284.05 KB (290,869 bytes)         12:05:02 PM       Microsoft Corporation         c:\winnt\system32\msvcrt.dll       5.00.2195.2953       173.77 KB (177,936         12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\winlogon.exe       sfcfiles.dll 5.00.2195.2967       948.27 KB (971,024 bytes)         10:26:34 AM       Microsoft Corporation         c:\winnt\system32\sifefiles.dll       corporation         ntdll.dll       5.00.2195.2779       478.77 KB (490,256 bytes)         12:05:02 PM       Microsoft Corporation	5/4/2001 bytes) 9/24/2001	TCP/IP NetBIOS Helper Service LmHosts Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  NetMeeting Remote Desktop Sharing mnmsrvc Stopped Manual Own Process c:\winnt\system32\mmsrvc.exe Normal LocalSystem 0  Distributed Transaction Coordinator MSDTC Running Auto Own Process c:\winnt\system32\msdtc.exe Normal LocalSystem 0  Distributed Transaction Coordinator MSDTC Running Auto Normal LocalSystem 0  Windows Installer MSIServer Stopped Manual Share Process c:\winnt\system32\msdtc.exe Normal LocalSystem 0  Windows Installer MSIServer Stopped Manual Share Process c:\winnt\system32\msdtc.exe Normal LocalSystem 0  Network DDE NetDDE Stopped Manual Share Process
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12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\kernel32.dll       284.05 KB (290,869 bytes)         12:05:02 PM       Microsoft Corporation         c:\winnt\system32\msvcrt.dll       5.00.2195.2953       173.77 KB (177,936         12/7/1999 7:00:00 AM       Microsoft Corporation         c:\winnt\system32\winlogon.exe       sfcfiles.dll 5.00.2195.2967       948.27 KB (971,024 bytes)         10:26:34 AM       Microsoft Corporation         c:\winnt\system32\steffiles.dll       ntdll.dll       5.00.2195.2779       478.77 KB (490,256 bytes)         12:05:02 PM       Microsoft Corporation         c:\winnt\system32\ntdll.dll	5/4/2001 bytes) 9/24/2001 5/4/2001	TCP/IP NetBIOS Helper Service LmHosts Process c:\winnt\system32\services.exe Normal LocalSystem 0  Messenger Messenger Running Auto Share Process c:\winnt\system32\services.exe Normal LocalSystem 0  NetMeeting Remote Desktop Sharing mnmsrvc Stopped Manual Own Process c:\winnt\system32\mmsrvc.exe Normal LocalSystem 0  Distributed Transaction Coordinator MSDTC Running Auto Own Process c:\winnt\system32\mstdc.exe Normal LocalSystem 0  Windows Installer MSIServer Stopped Manual Share Process c:\winnt\system32\mstdc.exe Normal LocalSystem 0  Windows Installer MSIServer Stopped Manual Share Process c:\winnt\system32\mstexc.exe /v Normal LocalSystem 0  Network DDE NetDDE Stopped Manual Share Process c:\winnt\system32\netdde.exe Normal LocalSystem 0
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Protected Storage Protected Storage Running Auto Share	Windows Management Instrumentation Driver Extensions Wmi
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Remote Access Auto Connection Manager RasAuto Stopped Manual	Normal LocalSystem 0
Share Process c:\winnt\system32\svchost.exe -k netsvcs Normal	
LocalSystem 0	[Program Groups]
Remote Access Connection Manager RasMan Stopped Manual	
Share Process c:\winnt\system32\svchost.exe -k netsvcs Normal	Group Name
LocalSystem 0	Accessories Default User: Accessories Default User
Routing and Remote Access RemoteAccess Stopped Disabled	Accessories\Accessibility Default User:Accessories\Accessibility
Share Process c:\winnt\system32\svchost.exe -k netsvcs Normal	Default User
LocalSystem 0	Accessories\Entertainment Default User: Accessories\Entertainment
Remote Registry Service RemoteRegistry Running Auto	Default User
Own Process c:\winnt\system32\regsvc.exe Normal	Accessories\System Tools Default User:Accessories\System Tools
LocalSystem 0	Default User
Remote Procedure Call (RPC) Locator RpcLocator Stopped	Startup Default User:Startup Default User
Manual Own Process c:\winnt\system32\locator.exe Normal	Accessories All Users: Accessories All Users
LocalSystem 0	Accessories\Accessibility All Users:Accessories\Accessibility
Remote Procedure Call (RPC) RpcSs Running Auto Share	All Users
Process c:\winnt\system32\svchost -k rpcss Normal	Accessories\Communications All Users:Accessories\Communications
LocalSystem 0	All Users
QoS Admission Control (RSVP) RSVP Running Auto Own	Accessories\Entertainment All Users:Accessories\Entertainment
Process c:\winnt\system32\rsvp.exe -s Normal LocalSystem 0	All Users
Security Accounts Manager SamSs Running Auto Share	Accessories\Games All Users: Accessories\Games All Users
Process c:\winnt\system32\lsass.exe Normal LocalSystem 0	Accessories\Microsoft Script Debugger All Users: Accessories\Microsoft
Smart Card Helper SCardDrv Stopped Manual Share Process	Script Debugger All Users
c:\winnt\system32\scardsvr.exe Ignore LocalSystem 0	Accessories\System Tools All Users: Accessories\System Tools
Smart Card SCardSvr Stopped Manual Share Process	All Users
c:\winnt\system32\scardsvr.exe Ignore LocalSystem 0	Administrative Tools All Users: Administrative Tools All Users
Task Scheduler Schedule Running Auto Share Process	Microsoft SQL Server All Users: Microsoft SQL Server All Users
c:\winnt\system32\mstask.exe Normal LocalSystem 0	Startup All Users:Startup All Users
RunAs Service seclogon Running Auto Share Process	Accessories CLIENT10\Administrator:Accessories
c:\winnt\system32\services.exe Ignore LocalSystem 0	CLIENT10\Administrator
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Process c:\winnt\system32\tcpsvcs.exe Normal LocalSystem 0	Tools CLIENT10\Administrator
Print Spooler Spooler Running Auto Own Process	Administrative Tools CLIENT10\Administrator:Administrative Tools
c:\winnt\system32\spoolsv.exe Normal LocalSystem 0	CLIENT10\Administrator
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LocalSystem 0	1 "Or" "
	[Internet Explorer 5]

oleaut32.dll 2.40.4517.0 612 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation [ Following are sub-categories of this main category ] 5.0.4517.0 160 KB olepro32.dll 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation [Summary] rsabase.dll 5.0.2195.2228 128 KB 5/4/2001 11:05:02 AM Item Value C:\WINNT\system32 Microsoft Corporation 5.00.3315.1000 rsaenh.dll 5.0.2195.2228 131 KB 5/4/2001 11:05:02 AM Version 53315.1000 C:\WINNT\system32 Microsoft Corporation Build Product ID 51876-270-7339724-05107 rsapi32.dll <File Missing> Not Available Not Available Not Available Application Path C:\Program Files\Internet Explorer Not Available Language English (United States) rsasig.dll <File Missing> Not Available Not Available Active Printer Not Available Not Available Not Available 5.1.2195.0 138 KB schannel.dll 5/4/2001 11:05:02 AM 168-bit C:\WINNT\system32 Microsoft Corporation Cipher Strength Disabled shdoc401.dll Content Advisor <File Missing> Not Available **IEAK Install** No Available Not Available Not Available shdocvw.dll 5.0.3315.2879 1078 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation [File Versions] shell32.dll 5.0.3315.2902 2304 KB 5/4/2001 11:05:02 AM File Version Size Date Path Company C:\WINNT\system32 Microsoft Corporation shlwapi.dl15.0.3315.1000 5/4/2001 11:05:02 AM 283 KB 5/4/2001 11:05:02 AM advapi32.dll 5 0 2195 2867 352 KB C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation advpack.dll 5/4/2001 11:05:02 AM 5.0.3103.1000 87 KB url.dll 5.0.2920.0 82 KB 12/7/1999 7:00:00 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation browselc.dll 5.0.3315.2846 35 KB 5/4/2001 11:05:02 AM urlmon.dll 5.0.3315.1000 441 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation 5.1.0.5907 428 KB browseui.dll 5.0.3315.2846 789 KB 5/4/2001 11:05:02 AM vbscript.dll 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation ckcnv.exe 5.0.2189.1 9 KB 12/7/1999 7:00:00 AM webcheck.dll 5.0.3315.1000 252 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation comctl32.dll 5.81.3103.1000 538 KB 5/4/2001 11:05:02 AM win.com 5.0.2134.1 24 KB 12/7/1999 7:00:00 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation crypt32.dll 5.131.2195.2833 451 KB 5/4/2001 11:05:02 AM wininet.dll 5.0.3315.1000 457 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation C:\WINNT\system32 Microsoft Corporation enhsig.dll <File Missing> Not Available Not Available winsock.dll 3.10.0.103 3 KB 12/7/1999 7:00:00 AM Not Available Not Available C:\WINNT\system32 Microsoft Corporation iemigrat.dll <File Missing> wintrust.dll 5.131.2195.2779 162 KB 5/4/2001 11:05:02 AM Not Available Not Available Not Available C:\WINNT\system32 Microsoft Corporation Not Available iesetup.dll 5.0.3103.1000 57 KB 5/4/2001 11:05:02 AM wsock.vxd <File Missing> Not Available Not Available C:\WINNT\system32 Microsoft Corporation Not Available Not Available iexplore.exe 5.0.2920.0 59 KB 12/7/1999 7:00:00 AM wsock32.dll 5.0.2195.2871 21 KB 5/4/2001 11:05:02 AM C:\Program Files\Internet Explorer C:\WINNT\system32 Microsoft Corporation Microsoft Corporation imagehlp.dll 5.0.2195.2778 126 KB 5/4/2001 11:05:02 AM wsock32n.dll <File Missing> Not Available Not C:\WINNT\system32 Microsoft Corporation Not Available Available Not Available imghelp.dll <File Missing> Not Available Not Not Available Available Not Available [Connectivity] inseng.dll 5.0.3103.1000 72 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation Item Value jobexec.dll5.0.0.1 47 KB 12/7/1999 7:00:00 AM Connection Preference Never dial C:\WINNT\system32 Microsoft Corporation EnableHttp1.1 jscript.dll 5.1.0.5907 476 KB 5/4/2001 11:05:02 AM ProxyHttp1.1 0 C:\WINNT\system32 Microsoft Corporation jsproxy.dll 5.0.2920.0 13 KB 12/7/1999 7:00:00 AM LAN Settings C:\WINNT\system32 Microsoft Corporation AutoConfigProxy msaahtml.dll <File Missing> Not Available Not wininet.dll Available Not Available Not Available AutoProxyDetectMode Enabled mshtml.dll 5.0.3315.2870 2290 KB 5/4/2001 11:05:02 AM AutoConfigURL C:\WINNT\system32 Microsoft Corporation Proxy Disabled msjava.dll 5.0.3802.0 923 KB 5/4/2001 11:05:02 AM ProxyServer C:\WINNT\system32 Microsoft Corporation ProxyOverride msoss.dll <File Missing> Not Available Not Available Not Available Not Available [Cache] msxml.dll 8.0.5718.1 493 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation [ Following are sub-categories of this main category ] occache.dll 5.0.3103.1000 86 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation [Summary] ole32.dll 5.0.2195.2887 970 KB 5/4/2001 11:05:02 AM C:\WINNT\system32 Microsoft Corporation Item Value

Page Refresh Type Automatic

Temporary Internet Files Folder C:\Documents and

Settings\Administrator\Local Settings\Temporary Internet Files

Total Disk Space 8667 MB Available Disk Space 6572 MB Maximum Cache Size 270 MB Available Cache Size 271 MB

[List of Objects]

Program File Status CodeBase No cached object information available

[Content]

[ Following are sub-categories of this main category ]

[Summary]

Value

Content Advisor Disabled

[Personal Certificates]

Issued To Issued By Validity Signature Algorithm

Administrator Administrator 9/17/2001 to 8/24/2101

sha1RSA

[Other People Certificates]

Issued To Issued By Validity Signature Algorithm No other people certificate information available

[Publishers]

No publisher information available

[Security]

Zone Security Level

Medium-low Local intranet

Trusted sites Low Internet Medium Restricted sites High

#### COM+ Settings

COM+ Settings

TPCC.AllTxns:

Activation:

Enable Object Pooling selected Minimum Pool Size: 137 Maximum Pool Size: 137 Creating Timeout: 60,000 **Enable Object Construction** Enable Just in Time Activation

Concurrency:

Concurrency Required

## TPCC Application Registry Parameters

**TPCC Application Registry Parameters** 

[HKEY LOCAL MACHINE\SOFTWARE\Microsoft\TPCC]

"Path"="c:\\inetpub\\wwwroot\\"

"NumberOfDeliveryThreads"=dword:0x11

"MaxConnections"=dword:0x34bc

"MaxPendingDeliveries"=dword:0x546

"DB Protocol"="ODBC"

"TxnMonitor"="COM"

"DbServer"="tpcc-3way"

"DbName"="tpcc"

"DbUser"="sa"

"DbPassword"=""

"COM SinglePool"="YES"

### Microsoft Internet Information Service Registry Parameters

Microsoft Internet Information Service Registry Parameters

[HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo]

[HKEY LOCAL MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo\P arameters]

"ListenBackLog"=dword:0x19

"DispatchEntries"=hex(7):4c,00,44,00,41,00,50,00,53,00,56,00,43,00,00,00,00,

"PoolThreadLimit"=dword:0xbe

"ThreadTimeout"=dword:0x15180

 $[HKEY\_LOCAL\_MACHINE \ SYSTEM \ Current Control Set \ Services \ In et Info \ P$ erformance]

"Library"="infoctrs.dll"

"Open"="OpenINFOPerformanceData"

"Close"="CloseINFOPerformanceData"

"Collect"="CollectINFOPerformanceData"

"Last Counter"=dword:0x842

"Last Help"=dword:0x843 "First Counter"=dword:0x802

Microsoft Internet Information Service Registry Parameters

 $[HKEY\_LOCAL\_MACHINE \SYSTEM \Current Control Set \Services \Inet Info]$ 

[HKEY LOCAL MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo\P arameters]

"ListenBackLog"=dword:0x19

"DispatchEntries"=hex(7):4c,00,44,00,41,00,50,00,53,00,56,00,43,00,00,00,00,

"PoolThreadLimit"=dword:0xbe

"ThreadTimeout"=dword:0x15180

 $[HKEY\_LOCAL\_MACHINE \ SYSTEM \ Current Control Set \ Services \ In et Info \ P$ erformance]

"Library"="infoctrs.dll"

"Open"="OpenINFOPerformanceData"

"Close"="CloseINFOPerformanceData"

"Collect"="CollectINFOPerformanceData"

"Last Counter"=dword:0x842

"Last Help"=dword:0x843

"First Counter"=dword:0x802

#### World Wide Web Service Registry **Parameters**

World Wide Web Service Registry Parameters

[HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC] Type"=dword:0x20

"Start"=dword:0x2

"ErrorControl"=dword:0x1

"ImagePath"=hex(2):43,00,3a,00,5c,00,57,00,49,00,4e,00,4e,00,54,00,5c,00,53,

79.00.73.00.74.00.65.00.6d.00.33.00.32.00.5c.00.69.00.6e.00.65.00.74.00.73.\ 00,72,00,76,00,5c,00,69,00,6e,00,65,00,74,00,69,00,6e,00,66,00,6f,00,2e,00,65,00,78,00,65,00,00,00

"DisplayName"="World Wide Web Publishing Service"

"DependOnService"=hex(7):49,00,49,00,53,00,41,00,44,00,4d,00,49,00,4e,00,0 0,00,\

00,00

"DependOnGroup"=hex(7):00,00

"ObjectName"="LocalSystem"

"Description"="Provides Web connectivity and administration through the Internet Information Services snap-in."

[HKEY LOCAL MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\ ASP]

"NOTE"="This is for backward compatibility only."

 $[HKEY\_LOCAL\_MACHINE \SYSTEM \Current Control Set \Services \W3SVC \CARVE \CAR$ ASP\Parameters]

[HKEY LOCAL MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\P arameters]

"MajorVersion"=dword:00000005

"MinorVersion"=dword:00000000

"InstallPath"="C:\\WINNT\\System32\\inetsrv"

"CertMapList"="C:\\WINNT\\System32\\inetsrv\\iiscrmap.dll"

"AccessDeniedMessage"="Error: Access is Denied."

"Filter DLLs"="

"LogFileDirectory"="C:\\WINNT\\System32\\LogFiles"

"AcceptExOutstanding"=dword:00000028

 $[HKEY\_LOCAL\_MACHINE \SYSTEM \Current Control Set \Services \W3SVC \P$ arameters\ADCLaunch]

[HKEY LOCAL MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\P arameters\ADCLaunch\AdvancedDataFactory]

 $[HKEY\_LOCAL\_MACHINE \ SYSTEM \ Current Control Set \ Services \ \ W3SVC \ P$ arameters\ADCLaunch\RDSServer.DataFactory]

[HKEY LOCAL MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\P arameters\Script Map]

[HKEY LOCAL MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\P arameters\Virtual Roots]

"/"="c:\\inetpub\\wwwroot,,205"

"/Scripts"="c:\\inetpub\\scripts,,1"

"/IISAdmin"="C:\\WINNT\\System32\\inetsrv\\iisadmin,,1"

"/IISSamples"="c:\\inetpub\\iissamples,,1"

 $"/MSADC"="c:\program files\common files\system\mbox{\common files}\system\common files\common files\common$ 

"/IISHelp"="c:\\winnt\\help\\iishelp,,1"

"/ vti bin"="C:\\Program Files\\Common Files\\Microsoft Shared\\Web Server Extensions\\40\\isapi.,1"

"/Rpc"="C:\\WINNT\\System32\\RpcProxy,,1"

"/Printers"="C:\\WINNT\\web\\printers,,201"

 $[HKEY\_LOCAL\_MACHINE \SYSTEM \Current Control Set \Services \W3SVC \P$ erformance]

"Library"="w3ctrs.dll"

"Open"="OpenW3PerformanceData"

"Close"="CloseW3PerformanceData"

"Collect"="CollectW3PerformanceData"

"Last Counter"=dword:000008f2

"Last Help"=dword:000008f3

"First Counter"=dword:00000850

"First Help"=dword:00000851

[HKEY LOCAL MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\S ecurity]

"Security"=hex:01,00,14,80,a0,00,00,00,ac,00,00,00,14,00,00,00,30,00,00,00

00,1c,00,01,00,00,00,02,80,14,00,ff,01,0f,00,01,01,00,00,00,00,00,00,01,00,00,05,12,00,00,00,74,00,6f,00,00,00,1c,00,ff,01,0f,00,01,02,00,00,00,00,00,0520,00,00,00,20,02,00,00,72,00,73,00,00,00,18,00,8d,01,02,00,01,01,00,00,00,\ 00,00,05,0b,00,00,00,20,02,00,00,00,00,1c,00,fd,01,02,00,01,02,00,00,00,00,00,05,20,00,00,00,23,02,00,00,72,00,73,00,01,01,00,00,00,00,00,05,12,00,00,00,01,01,00,00,00,00,00,05,12,00,00,00

[HKEY LOCAL MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\E num]

"0"="Root\\LEGACY W3SVC\\0000"

"Count"=dword:00000001

"NextInstance"=dword:00000001

#### **RTE Input Parameters**

1248w 16rte

File Path: C:\benchcrf\profile\1248w 16rte.pro

Version: 1.0.1

Number of Engines: 16

Name: DRIVER1 Description: rte11

Directory: c:\benchcrf\log\driver1

Machine: rtes2

Parameter Set: ~Default

Index: 0 Seed: 25744

Configured Users: 780

Pipe Name: DRIVER13910218

Connect Rate: 400 Start Rate: 0

CLIENT\_NURAND: 233

CPU: 0

Name: DRIVER10

Description: rte32

Directory: c:\benchcrf\log\driver10

Machine: rtes2 Parameter Set: ~Default Index: 900000000

Seed: 25744 Configured Users: 780

Pipe Name: DRIVER105368953

Connect Rate: 400 Start Rate: 0

CLIENT\_NURAND: 233

CPU: 1

Name: DRIVER11 Description: rte33

Directory: c:\benchcrf\log\driver11

Machine: rtes2 Parameter Set: ~Default Index: 1000000000 Seed: 25744

Configured Users: 780

Pipe Name: DRIVER115414703

Connect Rate: 400 Start Rate: 0

CLIENT NURAND: 233

CPU: 2

Name: DRIVER12 Description: rte34

Directory: c:\benchcrf\log\driver12

Machine: rtes2 Parameter Set: ~Default Index: 1100000000 Seed: 25744

Configured Users: 780

Pipe Name: DRIVER125445828

Connect Rate: 400 Start Rate: 0

CLIENT\_NURAND: 233

CPU: 3

Name: DRIVER13 Description: rte41

Directory: c:\benchcrf\log\driver13

Machine: rtes2 Parameter Set: ~Default Index: 1200000000 Seed: 25744 Configured Users: 780

Pipe Name: DRIVER135478015

Connect Rate: 400 Start Rate: 0 CLIENT\_NURAND: 233

CPU: 0

Name: DRIVER14 Description: rte42

Directory: c:\benchcrf\log\driver14

Machine: rtes2 Parameter Set: ~Default Index: 1300000000 Seed: 25744 Configured Users: 780

Pipe Name: DRIVER145517468

Connect Rate: 400 Start Rate: 0

CLIENT\_NURAND: 233

CPU: 1

Name: DRIVER15 Description: rte43

Directory: c:\benchcrf\log\driver15

Machine: rtes2 Parameter Set: ~Default Index: 1400000000 Seed: 25744

Configured Users: 780 Pipe Name: DRIVER155550687

Connect Rate: 400 Start Rate: 0

CLIENT\_NURAND: 233

CPU: 2

Name: DRIVER16 Description: rte44

Directory: c:\benchcrf\log\driver16

Machine: rtes2 Parameter Set: ~Default Index: 1500000000 Seed: 25744 Configured Users: 780

Pipe Name: DRIVER165594984

Connect Rate: 400

Start Rate: 0

CLIENT NURAND: 233

CPU: 3

Name: DRIVER2 Description: rte12

Directory: c:\benchcrf\log\driver2

Machine: rtes2 Parameter Set: ~Default Index: 100000000 Seed: 25744

Configured Users: 780 Pipe Name: DRIVER24802593

Connect Rate: 400 Start Rate: 0

CLIENT NURAND: 233

CPU: 1

Name: DRIVER3 Description: rte13

Directory: c:\benchcrf\log\driver3

Machine: rtes2 Parameter Set: ~Default Index: 200000000 Seed: 25744 Configured Users: 780 Pipe Name: DRIVER34857234 Connect Rate: 400 Start Rate: 0 CLIENT\_NURAND: 233

CPU: 2

Name: DRIVER4 Description: rte14

Directory: c:\benchcrf\log\driver4

Machine: rtes2 Parameter Set: ~Default Index: 300000000 Seed: 25744

Configured Users: 780 Pipe Name: DRIVER45155671

Connect Rate: 400 Start Rate: 0

CLIENT\_NURAND: 233

CPU: 3

Name: DRIVER5 Description: rte21

Directory: c:\benchcrf\log\driver5

Machine: rtes2 Parameter Set: ~Default Index: 400000000 Seed: 25744 Configured Users: 780 Pipe Name: DRIVER55193562 Connect Rate: 400 Start Rate: 0 CLIENT\_NURAND: 233

Name: DRIVER6

CPU: 0

Description: rte22 Directory: c:\benchcrf\log\driver6

Machine: rtes2 Parameter Set: ~Default Index: 500000000 Seed: 25744 Configured Users: 780

Pipe Name: DRIVER65224953

Connect Rate: 400 Start Rate: 0

CLIENT\_NURAND: 233

CPU: 1

Name: DRIVER7 Description: rte23

Directory: c:\benchcrf\log\driver7

Machine: rtes2 Parameter Set: ~Default Index: 600000000 Seed: 25744

Configured Users: 780

Pipe Name: DRIVER75257406

Connect Rate: 400 Start Rate: 0

CLIENT\_NURAND: 233

CPU: 2

Name: DRIVER8 Description: rte24

Directory: c:\benchcrf\log\driver8

Machine: rtes2 Parameter Set: ~Default Index: 700000000 Seed: 25744 Configured Users: 780 Pipe Name: DRIVER85300468 Connect Rate: 400

Start Rate: 0

CLIENT\_NURAND: 233

CPU: 3

Name: DRIVER9 Description: rte31

Directory: c:\benchcrf\log\driver9

Machine: rtes2 Parameter Set: ~Default Index: 800000000 Seed: 25744 Configured Users: 780

Pipe Name: DRIVER95332359

Connect Rate: 400 Start Rate: 0

CLIENT\_NURAND: 233

CPU: 0

Number of User groups: 16

Driver Engine: DRIVER1 IIS Server: client1 SQL Server: tpcc-3way

User: sa Protocol: Html w\_id Range: 1 - 78 w id Max Warehouse: 1248 Scale: Normal

User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER15 IIS Server: client4 SQL Server: tpcc-3way

User: sa Protocol: Html w id Range: 1093 - 1170 w id Max Warehouse: 1248

Scale: Normal User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER16 IIS Server: client4 SQL Server: tpcc-3way

User: sa Protocol: Html

w\_id Range: 1171 - 1248 w id Max Warehouse: 1248

Scale: Normal User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER2 IIS Server: client1 SQL Server: tpcc-3way

User: sa Protocol: Html w\_id Range: 79 - 156 w\_id Max Warehouse: 1248 Scale: Normal User Count: 780 District id: 1

Driver Engine: DRIVER3 IIS Server: client1 SQL Server: tpcc-3way

Scale Down: No

User: sa Protocol: Html w id Range: 157 - 234 w id Max Warehouse: 1248

Scale: Normal User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER4 IIS Server: client1 SQL Server: tpcc-3way

User: sa Protocol: Html w id Range: 235 - 312 w\_id Max Warehouse: 1248 Scale: Normal

User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER5 IIS Server: client2 SQL Server: tpcc-3way User: sa Protocol: Html w\_id Range: 313 - 390

w id Max Warehouse: 1248 Scale: Normal User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER6 IIS Server: client2

SQL Server: tpcc-3way User: sa Protocol: Html

w\_id Range: 391 - 468 w id Max Warehouse: 1248

Scale: Normal User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER7 IIS Server: client2 SQL Server: tpcc-3way

User: sa Protocol: Html

w\_id Range: 469 - 546 w id Max Warehouse: 1248

Scale: Normal User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER8 IIS Server: client2 SQL Server: tpcc-3way

User: sa

Protocol: Html

w\_id Range: 547 - 624 w\_id Max Warehouse: 1248

Scale: Normal User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER9 IIS Server: client3

SQL Server: tpcc-3way

User: sa

Protocol: Html

w\_id Range: 625 - 702 w id Max Warehouse: 1248

Scale: Normal User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER10

IIS Server: client3 SQL Server: tpcc-3way

User: sa Protocol: Html w\_id Range: 703 - 780 w\_id Max Warehouse: 1248 Scale: Normal User Count: 780

User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER11

IIS Server: client3 SQL Server: tpcc-3way

SQL Server: tpcc-3way
User: sa
Protocol: Html
w\_id Range: 781 - 858
w\_id Max Warehouse: 1248
Scale: Normal

User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER12 IIS Server: client3 SQL Server: tpcc-3way

User: sa

Protocol: Html

w\_id Range: 859 - 936 w\_id Max Warehouse: 1248

Scale: Normal User Count: 780 District id: 1

Scale Down: No

Driver Engine: DRIVER13

IIS Server: client4 SQL Server: tpcc-3way

User: sa

Protocol: Html

w\_id Range: 937 - 1014

w\_id Max Warehouse: 1248

Scale: Normal User Count: 780 District id: 1 Scale Down: No

Driver Engine: DRIVER14

IIS Server: client4 SQL Server: tpcc-3way

User: sa Protocol: Html

w\_id Range: 1015 - 1092

w\_id Max Warehouse: 1248

Scale: Normal User Count: 780 District id: 1 Scale Down: No

Number of Parameter Sets: 1

 $\sim\!\!Default$ 

Default Parameter Set

		Delucit I didii				
		Txn	Think	Key	RT R	T Menu
		Wei	ght Tim	e Time	Delay	Fence Delay
		New Order	44.88	12.05	18.01	0.10
5.00	0.10					
		Payment	43.03	12.05	3.01	0.10
5.00	0.10	-				
		Delivery	4.03	5.05	2.01	0.10
5.00	0.10					
		Stock Level	4.03	5.05	2.01	0.10
20.00	0.10					
		Order Status	4.03	10.05	2.01	0.10
5.00	0.10					

# Appendix D: 60-Day Space

		TPC-C 60-Day	Space Requiren	nents			
Warehouses	1,248				tpmC	15,533.72	
Table	Rows	Data KB	Index KB	Extra 5% KB	8HR Space	Total Space KB	
Warehouse	1,248	136	16	7.60		159.60	
District	12,480	1,392	16	70.40		1,478.40	
Item	100,000	9,528	32	478.00		10,054.80	
New-Order	11,232,000	177,584	424		99,840.00		
History	37,440,000	2,080,008	32		414,240.50		
Orders	37,440,000	1,147,592	521,856		332,471.00		
Customer	37,440,000	27,229,096	1,623,696	1,442,639.60		30,295,431.60	
Order-Line	374,408,027	23,400,504	49,552		4,670,084.67		
Stock	124,800,000	39,936,000	74,688	2,000,534.40		42,011,222.40	
Totals		93,981,840	2,270,312	3,443,730.00	5,516,636.16	105,212,518.16	
Segment	LogDev Cnt.	Segment Size	Needed	Overhead		Not Needed	
misc	Logber cht.	35,840,000	32,905,864	329,059		2,605,077.20	
big	4	81,920,000	72,306,654	723,067		8,890,279.46	
master, msdb,model	1	13,312	13,312	123,001		0,090,279.40	
	1	· ·	· ·				
tpcc_root	<u> </u>	8,192	8,192				
tempdb	1	8,704	8,704				
Totals		117,790,208.00	105,242,726.16	1,052,125.18		11,495,356.66	
Dynamic Space	26 628 104 00	Sum of Data for Or	der, Order-Line and H	istory			
Static Space							
Free Space		Data + Index + 5% Space + Overhead - Dynamic Space  Total Segment Size - Dynamic Space - Static Space - Not needed					
Daily Growth	5 302 993 74	(Dynamic Space/W * 62.5)* tpmC					
Daily Spread	(2 407 646 45)	Free Space - 1.5 * Daily Growth (Zero If Negative)					
zunj op.ouu	(=, ::: ,: ::: ::)		, C.C (_C.C				
60-Day Space (KB)	392 299 527 54	Static Space + 60 (I	Daily Growth + Daily 9	Snread)			
60-Day Space (RB)			Static Space + 60 (Daily Growth + Daily Spread)				
Available (GB)	676.60	60-Day Space in GB (Excludes OS,Paging and RDBMS Logs) Total storage configured and available for database, minus logs, in RAID-0 configuration.					
Log File Storage Requ		Total Storage comi	garea aria avanabie i	or autabase, minus			
		Total Cine of Law Fi	ll-				
Log Size (MB)		Total Size of Log Fi					
% Log Used Total N-O Txn		% of Log File Used During Entire Run					
Log / N-O Txn		Total Count of New-Order Transactions during Entire Run					
8 Hour Log (GB)		KB of Log per New-Order Transaction  8 Hours of Log in GB (Excluding Space for Redundancy)					
Log Configured (GB)	68.35		to (Excluding Space )	or Reduildancy)			
Disk Capacity	MB	GB					
9.1GB	8,678	8.45					
18.2GB	· ·	16.95					
	17,356						
73.4GB	69,990	68.35					
Space Usage	GB Needed		Disks Priced	Disk Size	GB Priced	GB Usable	
60-Day (RAID-0)	374.13		56	9.1GB	473.20		
OU-Day (NAID-U)	3/4.13						
Total DB			12 68	18.2GB	203.40 676.60		
	05.05			70 100			
8hr Log (RAID-1)	35.95		2	73.4GB	136.70		
OS, SQL Server	4.00		-	9.1GB	8.45		
Total Space	414.08		71		821.75	753.4	

appendix E: Third-Party Quotations				

Microsoft Corporation Tel 425 882 8080 One Microsoft Way Fax 425 936 7329 One Microsoft Way Redmond, WA 98052-6399

Fax 425 936 7329 http://www.microsoft.com/

**Microsoft** 

November 5, 2001

IBM Corp. Chris King **IBM** Corporation 3039 Cornwallis Road Research Triangle Park, NC 27709

#### Chris:

Here is the information you requested regarding pricing for several Microsoft products to be used in conjunction with your TPC-C V5.0 benchmark testing.

All pricing shown is in US Dollars (\$).

Part Number	Description	Unit Price	Quantity	Price
228-01079	SQL Server 2000 Standard Edition Per processor licensing	\$ 4,999	2	\$ 9,998
C11-00821	Windows 2000 Server Server license only - No CALs Discount schedule: Open Program - No Level	\$ 738	1	\$ 738
048-00317	Visual C++ Professional 6.0 Win32	\$ 549	1	\$ 549
	3-year maintenance for above software	\$ 2,095	1	\$ 6,285

All products are currently orderable through Microsoft's normal distribution channels.

This quote is valid for the next 90 days.

If we can be of any further assistance, please contact Jamie Reding at (425) 703-0510 or jamiere@microsoft.com.

Reference ID: Pdxcm0105110730

Please include this Reference ID in any correspondence regarding this price quote.

