NEC

TPC Benchmark™ C
Full Disclosure Report

NEC Express5800/140Rb-4 (4 SMP)

Using Microsoft Windows 2000 Advanced Server
and Microsoft SQL Server 2000 Enterprise Edition

First Edition
June 20, 2002

NEC, the Sponsors of this benchmark test, believe that the information in this document is accurate as of the publication date. The information in this document is subject to change without notice. The Sponsor assumes no responsibility for any errors that may appear in this document. The pricing information in this document is believed to accurately reflect the current prices as of the publication date. However, The Sponsor provides no warranty of the pricing information in this document.

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

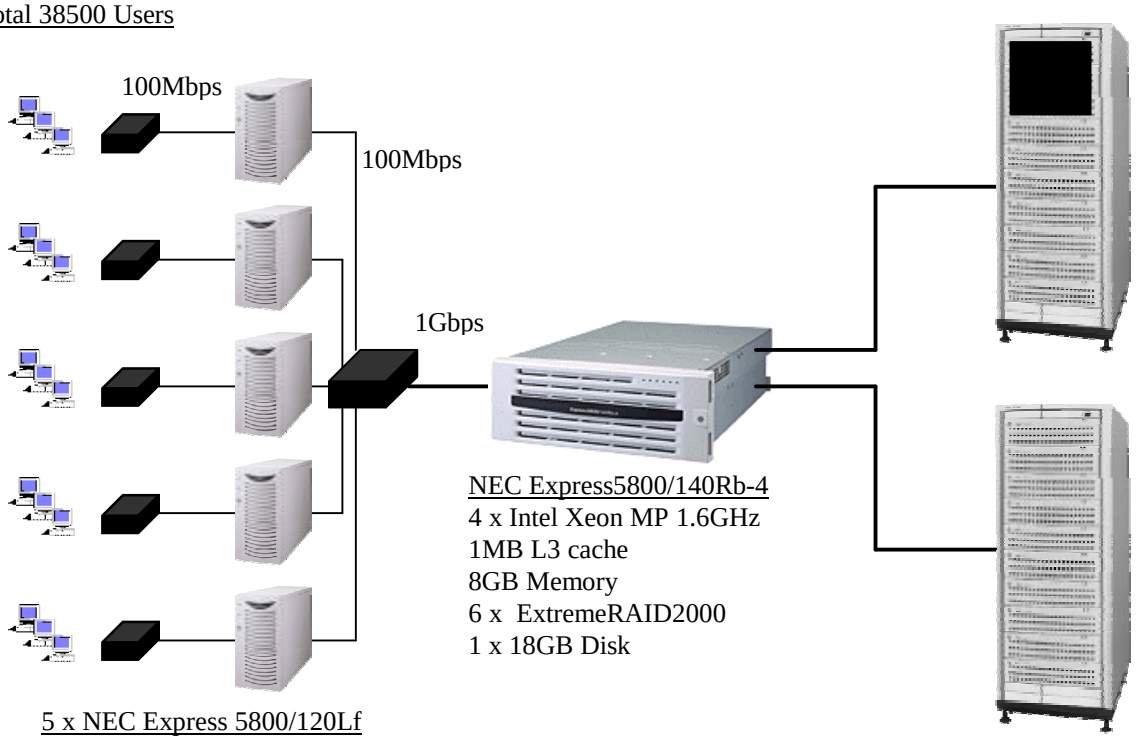
All performance data contained in this report were obtained in a rigorously controlled environment. Results obtained in other operating environments may vary significantly. NEC do not warrant or represent that a user can or will achieve similar performance expressed in transactions per minute (tpmC) or normalized price/performance ($/tpmC). No warranty of system performance or price/performance is expressed or implied in this report.

Printed in USA, 2002

NEC	Express5800/140Rb-4 C/S with 5 Express5800/120Lf		TPC-C Rev. 5.0 Reported Date June 20, 2002
Total System Cost	**TPC-C Throughput**	**Price/Performance**	**Availability Date**
$ 311,093	**48,150.72 tpmC**	**$6.46 per tpmC**	**July 31, 2002**

Processors	Database Manager	Operating System	Other Software	Number of Users
4 Intel Xeon MP 1.6GHz for Server 5 x 2 Intel Pentium III 1.0GHz for Client	Microsoft SQL Server 2000 Enterprise Edition	Microsoft Windows 2000 Advanced Server	Windows 2000 Server Microsoft VC++	**38,500**

Total 38500 Users



NEC Express5800/140Rb-4
4 x Intel Xeon MP 1.6GHz
1MB L3 cache
8GB Memory
6 x ExtremeRAID2000
1 x 18GB Disk

5 x NEC Express 5800/120Lf
2 x Pentium III 1.0GHz 256KB L2 cache
1GB Memory
1 x 18GB disk

Disk Subsystem
17 x NEC 3U Disk Expansion Unit
179 x 18GB Disks

System Component	Server		Each Client	
Processors **Cache**	4	Intel Xeon MP 1.6GHz 1MB L3 Cache	2	Intel Pentium III 1.0GHz 256KB L2 Cache
Memory		8GB		1GB
Disk Controllers	6 1	Mylex eXtremeRAID 2000 Onboard SCSI	1	On-board SCSI
Disk Drives	1 179	18GB 18GB	1	18GB
Total Storage		3,073 GB		18GB
Others	1 1	CD-ROM Drive On-board 1Gbps Ether NIC	1 2	CD-ROM Drive On-board Ether NIC

NEC

NEC Express5800/140Rb-4
C/S with 5 Express5800/120Lf

TPC-C REV 5.0

Report Date:
June 20 ,2002

Description	Part Number	Third Party Brand	Pricing	Unit Price	Qty	Extended Price	3-yr Mnt. Price
Server Hardware							
Express5800/140Rb-4 system							
Base system with 1 x Pentium Xeon 1.6GHz/1MB	NS240000256	NEC	1	9,200	1	9,200	2,208
Pentium Xeon 1.6GHz/1MB BTO Option	062-02066-000	NEC	1	5,499	3	16,497	3,959
4GB (4 x 1GB DDR200 DIMM) memory,	062-02070-000	NEC	1	3,600	2	7,200	1,728
18GB 10K rpm HDD,	062-02071-000	NEC	1	369	1	369	89
On-board Gbit Ether LAN	Included	NEC	1	0	1	0	0
CD-ROM, On-board LAN, KB/MS	Included	NEC	1	0	1	0	0
20/40GB SCSI DDS-4 DAT Internal Drive	ADT-4010-IN-00	NEC	1	949	1	949	228
NEC AccuSync50 (15" monitor)	AS50	NEC	3	145	1	145	35
					Subtotal	34,360	8,246
Disk Subsystem							
Extreme RAID2000 4channel controller (+2 spares)	E2000-4-32NB	Mylex	3	1,427	8	11,416	0
3U Disk Expansion Unit ST1430(+2 spares)	NDE-1430-00-00	NEC	1	2,299	19	43,681	0
18GB 15k rpm HDD(+10% spares)	062-02118-000	NEC	1	486	197	95,742	0
42U Rackframe	050-01790-000	NEC	1	1,799	2	3,598	0
APC Smart UPS	050-01800-000	NEC	1	1,599	2	3,198	768
					Subtotal	157,635	768
Server Software							
SQL Server2000 Ent. Edition,Unlimited Client Licenses	810-00846	Mcrosoft	2	16,541	4	66,164	5,850
Windows2000 Advanced Server, 25 Client Licenses	C10-00475	Mcrosoft	2	2,399	1	2,399	0
					Subtotal	68,563	5,850
Client Hardware							
NEC Express5800/120Lf							
Base System with 1 x Pentium III 1GHz/256KB	850151001	NEC	1	1,899	5	9,495	2,279
1 x Pentium III 1GHz/256 BTO Option	062-02002-000	NEC	1	599	5	2,995	719
2 x 256MB memory,	062-02008-000	NEC	1	499	10	4,990	1,198
1 x 18GB 10K rpm HDD,	062-02011-000	NEC	1	369	5	1,845	443
CD-ROM, 2 x On-board LAN, KB/MS	Included	NEC	1	0	5	0	0
NEC AccuSync50 (15" monitor)	AS50	NEC	3	145	5	725	174
					Subtotal	20,050	4,812
Client Software							
Windows2000 Server	C11-00821	Mcrosoft	2	738	5	3,690	0
Visual C++ Professional 6.0	048-00317	Mcrosoft	2	549	1	549	0
					Subtotal	4,239	0
User Connectivity							
Allied Telesyn 6-prt Gigabit Switch (+2spare)	AT-9006T	Allied Telesyn	3	2,190	3	6,570	0
					Subtotal	6,570	0
					TOTAL	291,417	19,676

Notes:
All Mcrosoft maintenance is covered by the maintenance costs of Mcrosoft SQL Server
Pricing: 1-NEC 2-Mcrosoft 3-CDW
3 : with 3-year warranty

Audited by Francois Raab and Bradley Askins, InfoSizing, Inc

3-Yr. Cost of Ownership: **$311,093**
tpmC Rating: **48150.72**

$ / tpmC: 6.46

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 reflects standard pricing policies for the listed components. For complete details, see the pricing sections of the TPC benchmark specifications. If you find that the 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 Qualified Throughput			48,150.72 tpmC
Response Times(in seconds)	**90%**	**Average**	**Maximum**
New-Order	0.70	0.42	6.72
Payment	0.58	0.31	6.20
Stock-Level	2.30	1.63	7.77
Delivery(interactive portion)	0.11	0.10	1.09
Delivery(deferred portion)	1.08	0.58	3.95
Order-status	0.62	0.34	6.79
Menu	0.11	0.10	2.62
Response time delay added for emulated components			0.1
Transaction Mix , in percent of total transaction			
New-Order			44.93%
Payment			43.05%
Order-status			4.00%
Delivery			4.01%
Stock-level			4.01%

Keying/Think Times (in seconds)	**Min.**		**Average**		**Max**	
New-Order	18.00	0.00	18.02	12.05	18.04	120.50
Payment	3.00	0.00	3.02	12.05	3.04	120.50
Stock-Level	2.00	0.00	2.02	5.05	2.04	50.50
Delivery	2.00	0.00	2.02	5.07	2.04	50.50
Order-status	2.00	0.00	2.02	10.05	2.04	100.50

Test Duration	
Ramp-up time	50 minutes
Measurement interval	120 minutes
Number of checkpoints	4
Checkpoint interval	30 minutes
Number of transactions (all types) completed in measurement interval	13,377,224

Abstract

This report documents the compliance of NEC Corporation's TPC Benchmark™ C tests on the NEC Express 5800/140Rb-4 client/server system with version 5.0 of the TPC Benchmark C Standard Specification. 5 Clients (NEC Express 5800/120Lf) were used as the front-end clients.

The operating system and the DBMS used on the server were Microsoft Windows 2000 Advanced Server and Microsoft SQL Server 2000. The operating system on the clients was Microsoft Windows 2000 Server. Those clients ran Microsoft's IIS server 5.0 and COM+.

Two standard metrics, transaction-per-minute-C(tpmC) and price per tpmC($/tpmC) are reported, in accordance with the TPC Benchmark™ C Standard. The independent auditor's report by Francois Raab and Bradley Askins appears at the end of this report.

TPC Benchmark™ C Metrics

The standard TPC Benchmark™ C metrics, tpmC (transactions per minute), price per tpmC (five year capital cost per measured tpmC) are reported.

System	SW	Total System Cost	tpmC	$ per tpmC	Availability Date
NEC Express5800/140Rb-4	Microsoft Windows 2000 Advanced Server Microsoft SQL Server 2000 Enterprise Edition	$311,093	48,150.72	$6.46	July 31, 2002

Standard and Executive Summary Statements

The following pages contain executive summary of results for this benchmark.

Auditor

The benchmark configuration, environment and methodology were audited by Francois Raab and Bradley Askins of InfoSizing Inc. to verify compliance with the relevant TPC specifications.

Preface

The TPC Benchmark™ 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 Specifications Version 5.0.

TPC Benchmark™ C Overview

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

TPC Benchmark™ C (TPC-C) is an 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 such 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.

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 benchmark when critical capacity planning and/or product evaluation decisions are contemplated.

Document Structure

This TPC Benchmark™ C Full Disclosure Report is organized as follows:

- The main body of the document lists each item in Clause 8 of the TPC-C Standard and explains how each requirement is satisfied.
- Appendix A contains the source code of the TPC-C application code used to implement the TPC-C transactions.
- Appendix B contains the database definition and population code used in the tests.
- Appendix C contains the tunable parameters used in the TPC-C tests.
- Appendix D contains space calculation table.
- Appendix E contains third-party price quotations.

TPC Benchmark™ C Full Disclosure

The TPC Benchmark™ C Standard Specification requires test sponsors to publish, and make available to the public, a full disclosure report for the results to be considered compliant with the Standard. The required contents of the full disclosure report are specified in Clause 8. This report is intended to satisfy the Standard's requirement for full disclosure. It documents the compliance of the benchmark tests with each item listed in Clause 8 of the TPC Benchmark™ C Standard Specification.

In the Standard Specification, the main headings in Clause 8 are keyed to the other clauses. The headings in this report use the same sequence, so that they correspond to the titles or subjects referred to in Clause 8.

Each section in this report begins with the text of the corresponding item from Clause 8 of the Standard Specification, printed in italic type. The plain text that follows explains how the tests comply with the TPC Benchmark™ C requirement. In sections where Clause 8 requires extensive listings, the section refers to the appropriate appendix at the end of this report.

General Items

Order and titles

The order and titles of sections in the Test Sponsor's Full Disclosure Report must correspond with the order and titles of for TPC-C standard specification. The intent is to make it as easy as possible for readers to compare and contrast material in different Full Disclosure reports.

The order and titles of sections in this report correspond with that of the TPC-C standard specification.

Summary Statement

The TPC Executive Summary Statement must be included near the beginning of the Full Disclosure report.

The TPC Executive Summary Statement is included at the beginning of this report.

Numerical Quantities Summary

The numerical quantities listed below must be summarized near the beginning of the Full Disclosure Report.

- *measurement interval in minutes,*
- *number of checkpoints in the measurement interval,*
- *checkpoint interval in minutes,*
- *number of transactions (all types) completed within the measurement interval,*
- *computed maximum Qualified Throughput in tpmC,*
- *ninetieth percentile, average and maximum response times for the New-Order, Payment, Order-Status, Stock-Level, Delivery(deferred and interactive) and Menu transactions,*
- *time in seconds added to response time to compensate for delays associated with emulated components,*
- *percentage of transaction mix for each transaction type.*

These numerical quantities are summarized at the beginning of this report.

Application Program

The application program (as defined in 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 the application source codes used in the TPC-C benchmark.

Sponsor

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

This benchmark test was sponsored by NEC Corporation . NEC has authorized NEC Corp. to publish TPC-C performance and price/performance results for the NEC Epress5800/140Rb-4. Price quotations contained in Appendix E correspond to the NEC Express5800/140Rb-4 server.

Parameters and Options

Settings must be provided for all customer-tunable parameters and options which 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/ordatabases.*

Appendix C contains the tunable parameters used in the TPC-C tests.

Configuration Diagrams

Diagrams of both measured and priced configurations must be provided, accompanied by a description of the differences. This includes, but is not limited to:

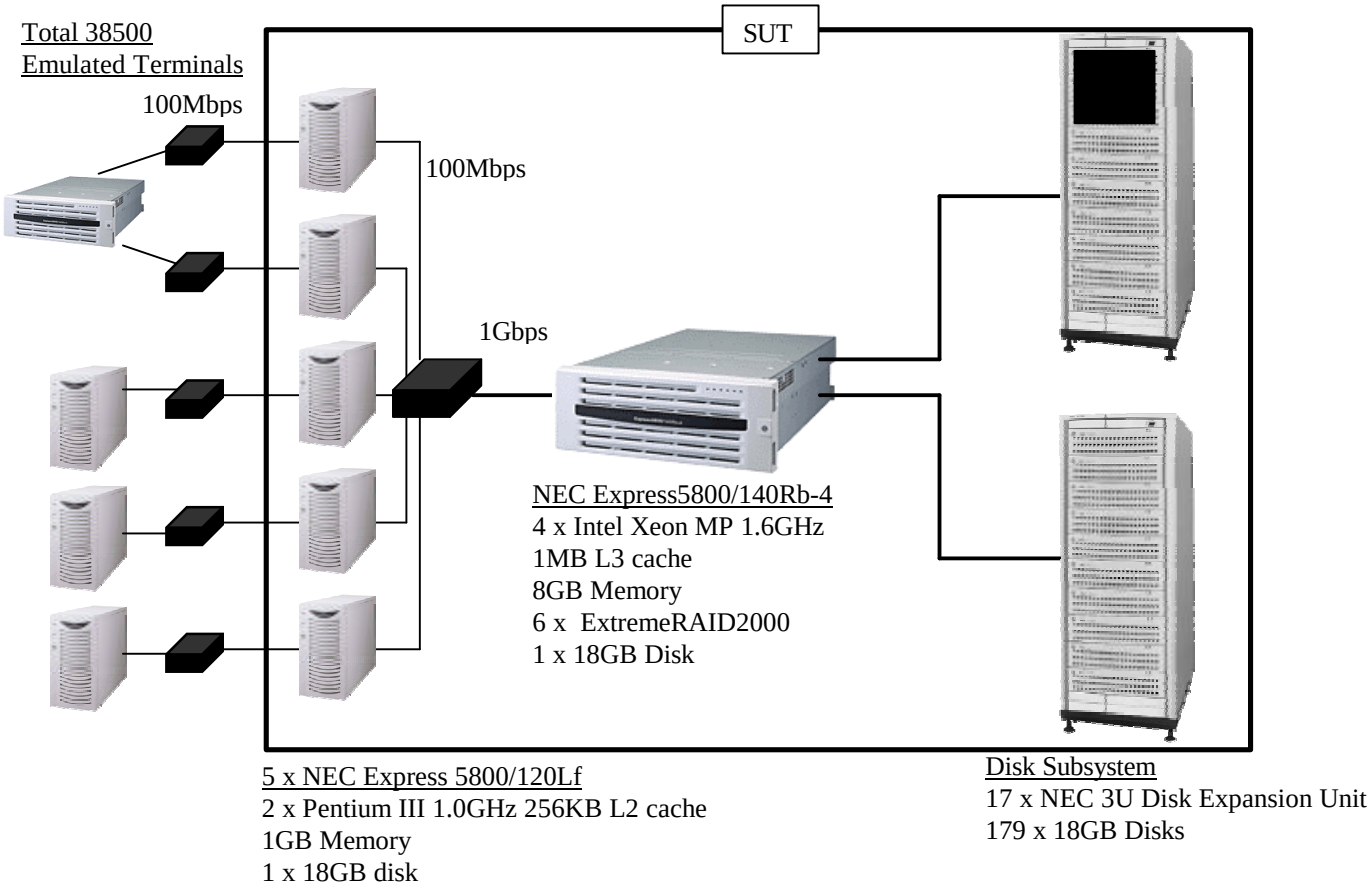
- *Number and type of processors.*
- *Size of allocated memory, and any specific mapping/partitioning of memory unique to the test.*
- *Number and type of disk units (and controllers, if applicable).*
- *Number of channels or bus connections to disk units, including their protocol type.*
- *Number of LAN (e.g., Ethernet) connections, including routers, workstations, terminals, etc., that were physically used in the test or are incorporated into the pricing structure (see Clause 8.1.8).*
- *Type and the run-time execution location of software components (e.g., DBMS, client processes, transaction monitors, software drivers, etc.).*

Figure 1.1 shows the measured configuration diagram.
Figure 1.2 shows the priced configuration diagram.

Measured Configuration

The following figure represents the measured configuration. The benchmark system used a remote terminal emulator(RTE) to initiate transactions and measure response times of transactions, as well as record various data for each transaction.

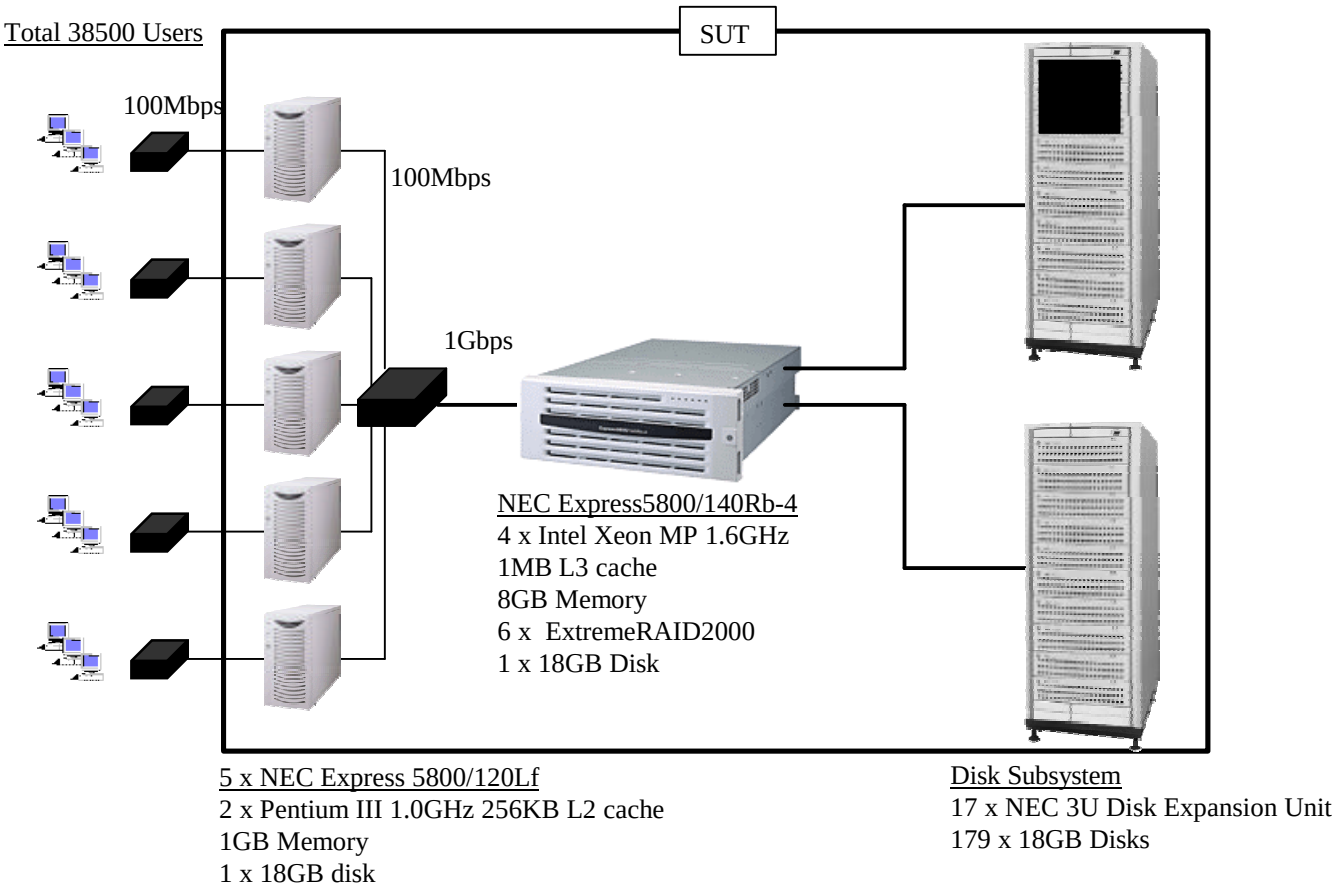
Figure 1.1 Express5800/140Rb-4, Measured Configuration Diagram



Priced System Configuration

The following figure depicts the priced system, whose cost determines the normalized price per tpmC reported for the test.

Figure1.2: Express5800/140Rb-4, Priced Configuration Diagram



Clause 1 : Logical Database Design and Related Items

Table Definitions

Listing 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..

Table Organization

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

Appendix B contains the code used to define the physical organization of tables and indices

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 entire benchmark.

Disclosure of Partitioning

While there are a 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 on any table in this benchmark.

Replication of Tables

Replication of tables, if used, must be disclosed.

No tables were replicated in this benchmark test.

Additional and/or Duplicated Attributes in any Table

Additional and/or duplicated attributes in any table must be disclosed along with a statement on the impact on performance.

No duplications or 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 described.

Random numbers were generated internaly by the Microsoft BenchCraft RTE program which was already audited independently.

Terminal Input/Output Screen Layout

The actual layout of the terminal input/output screens must be disclosed.

All screen layouts followed the specifications exactly.

Terminal feature 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 for the demonstration in 8.1.3.3 must be disclosed and commercially available (including supporting software and maintenance).

Each of five transaction types was tested by the auditor. The auditor verified that all the features specified in Clause 2.2.2.4 were provided.

Presentation Manager or Intelligent Terminal

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

Application code running on the client machines implemented the TPC-C user interface. No presentation manager software or intelligent terminal features were used. The source code for the applications is listed in Appendix A.

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.*

Table 1 shows the numerical quantities required by Clause 8.1.3.5 through 8.1.3.10.

Transaction Mix

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

Table 1 shows the mix of transaction types seen by the SUT during the reported measurement interval.

Following table summarizes the data required for disclosure in section 3.5 through 3.11.

Table 1 Transaction Statistics

	Statistic	Value
New Order	Home warehouse order lines	**99.00%**
	Remote warehouse order lines	**1.00%**
	Rolled back transactions	**1.00%**
	Average items per order	**10.00**
Payment	Home warehouse payments	**85.01%**
	Remote warehouse payments	**14.99%**
	Accessed by last name	**60.00%**
Order Status	Accessed by last name	**60.06%**
Delivery	Skipped deliveries	**0**
Transaction Mix	New Order	**44.93%**
	Payment	**43.05%**
	Stock Level	**4.01%**
	Delivery	**4.01%**
	Order Status	**4.00%**

Queuing Mechanism

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

The client application processes submitted delivery transactions to named pipe delivery server software running on the client machines. There was a single delivery server with multiple execution threads running on each client machine. These delivery servers were responsible for processing deliveries queued to the named pipe and submitting them to the database server.

The source code is listed in Appendix A.

Clause 3 : Transaction and System Properties Related Items

Transaction System Properties (ACID)

The results of the ACID tests 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.

The TPC Benchmark™ C Standard Specification defines a set of transaction processing system properties that a system under test (SUT) must support during the execution of the benchmark. Those properties are Atomicity, Consistency, Isolation and Durability (ACID). This section quotes the specification definition of each of those properties and describes the tests done as specified and monitored by the auditor , to demonstrate compliance.

Atomicity Tests

The system under test must guarantee that the 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.

Completed Transactions

Perform the Payment for randomly selected warehouse, district and customer(by customer number as specified in Clause 2.5.1.2) and verify that the records in the CUSTOMER,DISTRICT and WAREHOUSE tables have been changed appropriately.

The value of w_ytd, d_ytd, c_balance, c_ytd_payment and c_payment_cnt of a randomly selected warehouse, district, and customer were retrieved. The Payment transaction was executed on the same warehouse, district, and customer. The transaction was committed. The values w_ytd, d_ytd, c_balance, c_ytd_payment, and c_payment_cnt were retrieved again. It was verified that all values had been changed appropriately.

Aborted Transactions

Perform the Payment transaction for randomly selected warehouse, district and customer(by customer number as specified in Clause 2.5.1.2) and substitute a ROLLBACK of the transaction for the COMMIT of the transaction. Verify that records in CUSTOMER, DISTRICT and WAREHOUSE tables have Not been changed.

The value of w_ytd, d_ytd, c_balance, c_ytd_payment and c_payment_cnt of randomly selected warehouse , district, and customer were retrieved. The Payment transaction was executed on the same warehouse, district, and customer. The transaction was rolled back. The values of w_ytd, d_ytd, c_balance, c_ytd_payment, c_payment_cnt were retrieved again. It was verified that none of the values had changed.

Consistency Tests

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 script to issue queries to the database. The results of the queries verified that the database was consistent for all four tests. A run was executed over 20 minutes under 19250 users (1925 active warehouse) condition . A checkpoint generated in the test. The shell script of consistency was executed before and after the run. The result of the same queries verified that the database remained consistent after the run.

Isolation Tests

Sufficient conditions must be enabled at either the system or application level to ensure the required isolation level is obtained.

Isolation tests one through nine were executed 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 to files. The captured files were verified to demonstrate the required isolation had been met.
Case A was followed for Isolation Test 7, 8 and 9.

Durability Tests

The tested system must guarantee durability: the ability to preserve the effects of committed transaction and insure 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 database, ABTH files/tables, or recovery log data.*
- *Instantaneous interruption(system crash/system hang) in processing which requires system reboot to recover.*
- *Failure of all or part of memory(loss of contents)*

Loss of Memory

Because the loss of power erases the contents of memory, both of instantaneous interruption and loss of memory were combined into a single test.

The following steps were performed on a database of 3850 warehouses under the full load of users.

1. A sum of D_NEXT_O_ID of all rows in the district table was taken.
2. 38500 users were logged in to the database and start transactions.
3. Verified the number of TpmC is over 90% of reported TpmC after all emulated users were activated.
4. The running continued 20 minutes after all emulated user generate transactions.
5. The system was powered off.
6. The RTE was shutted down.
7. The system was powered up. SQL Server was restarted and automatically recovered.
8. A new count of D_NEXT_O_ID was taken.
9. This number was compared with the number of new orders reported by the RTE.

Loss of Data and Log

Loss of data was demonstrated on a 400 Warehouse database. The standard driving mechanism was used to generate the transaction load of 4000 users for the test. To demonstrate recovery from a permanent failure of durable media containing TPC-C tables, the following steps were performed. The loss of log was combined into the test

1. A 400 Warehouse database was built having similar characteristics to the large database.
2. The database was backed up using SQL Server backup facilities.
3. A sum of D_NEXT_O_ID was taken.
4. 4000 users were logged in to the database and running transactions 5 minutes.
5. Removed one of mirrored log disk. The running continued without any interruptions.
6. One disk drive for data part in the array was removed causing SQL Server error. Shut down SQL Server.
7. SQL Server was restarted and a dump of the transaction log was taken.
8. The 400 Warehouse database was restored from backup.
9. The transaction log was restored and transactions rolled forward.
10. A new count of D_NEXT_O_ID was taken.
11. This number was compared with the number of new orders reported by the RTE.

Clause 4 : Scaling and Database Population Related Items

Initial 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 TPC-C database was originally built with 3850 warehouses.

Table 2 Number of Rows for Server

Table	Cardinality as benchmarked
Warehouse	3,850
Distinct	38,500
Customer	115,500,000
History	115,500,000
Orders	115,500,000
New Order	34,650,000
Order Line	1,154,992,621
Stock	385,000,000
Item	100,000
Deleted Warehouse Rows	0

Constant Value for the NURand function

The following values were used as constant value inputs to the NURand function for this benchmark.

C_LAST (Build)	**123**
C_LAST (RUN)	**233**

Distribution of Tables and Logs

The distribution of tables and logs across all media must be explicitly depicted for tested and priced systems.

Table 3 depicts the distribution of the database over the disks of the tested system.
The CS filegroup contains Customer and Stock table, and the MISC filegroup contains the other tables.
For details, see database build scripts in Appendix B.

Table 3 : Data Distribution

DAC#	Configuration	Phisicaldisk Capacity (GB)	Partition1	Partition2	Partition3
Partitions for DB Data			misc fg (raw)	cs fg (raw)	For backup file (NTFS)
0	33 spindles RAID0	563.44	F: (45GB)	M: (75GB)	S: (443.44GB)
1	33 spindles RAID0	563.44	G: (45GB)	N: (75GB)	T: (443.44GB)
2	33 spindles RAID0	563.44	H: (45GB)	O: (75GB)	U: (443.44GB)
3	33 spindles RAID0	563.44	I: (45GB)	P: (75GB)	V: (443.44GB)
4	33 spindles RAID0	563.44	J: (45GB)	Q: (75GB)	W: (443.44GB)
Partitions for DB Log			DB Log (raw)	Workspace (NTFS)	
5	Span 7 RAID1 pairs (2 X 7 spindles)	119.49	E: (100GB)	L: (19.49GB)	
Partitions for OS (single SCSI disk)			OS (NTFS)		
		8.46	C: (8.46GB)		

Type of Database

A statement must be provided that describes:

1. *The data 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, a relational database, was used in this benchmark. SQL Server stored procedures were used and invoked through DB-Library function calls embedded in C code.

Database Mapping

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

No partitioning or replication was used.

60-Days Space

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.

The detail of 60-day space calculation is shown in Appendix D.
To calculate the space required to sustain the database log for 8 hours of growth at steady state, the following steps were followed:

1. The free space on the log file was queried using *DBCC sqlperf(logspace).*
2. The sum of d_next_o_id was queried.
3. Transactions were run against the database with a full load of users.
4. The free space was again queried using *DBCC sqlperf(logspace).*
5. The sum of d_next_o_id was again queried.
6. The space used was calculated as the difference between the first and second query.
7. The number of NEW-ORDERS was obtained by substracting 2. from 5.
8. The space used was divided by the number of NEW-ORDERS giving a spaceused per NEW-ORDER transaction.
9. The space used per transaction was multiplied by the measured tpmC rate times 480 minutes.

The results of the above steps yielded a requirement of 103.84 GB (need double for mirroring) to sustain the log for 8 hours. Space available on the transaction log volume was 238.98 GB (including mirror), indicating that enough storage was configured to sustain 8 hours of growth.

The same methodology was used to compute growth requirements for dynamic tables Order,Order-Line and History.

Clause 5 : Performance Metrics and Response Time Related Items

Throughput

Measured tpmC must be reported

Table 4 : Measured tpmC

48,150.72 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.

Table 5 : Response Times (in seconds)

Type	Average	Maximum	90th %
New-Order	0.42	6.72	0.70
Payment	0.31	6.20	0.58
Stock-Level	1.63	7.77	2.30
Interactive Delivery	0.10	1.09	0.11
Deferred Delivery	0.58	3.95	1.08
Order-Status	0.34	6.79	0.62
Menu	0.10	2.62	0.11

Keying and Think Times

The minimum, the average, and the maximum keying and think times must be reported for each transaction type.

Table 6 : Keying Times

Type	Minimum	Average	Maximum
New-Order	18.00	18.02	18.04
Payment	3.00	3.02	3.04
Stock Level	2.00	2.02	2.04
Interactive Delivery	2.00	2.02	2.04
Order Status	2.00	2.02	2.04

Table 7 : Think Times

Type	Minimum	Average	Maximum
New-Order	0.00	12.05	120.50
Payment	0.00	12.05	120.50
Stock Level	0.00	5.05	50.50
Interactive Delivery	0.00	5.07	50.50
Order Status	0.00	10.05	100.50

Response Time Frequency Distribution Curves and Other Graphs

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

Figure 2.1 : New-Order Response Time Distribution

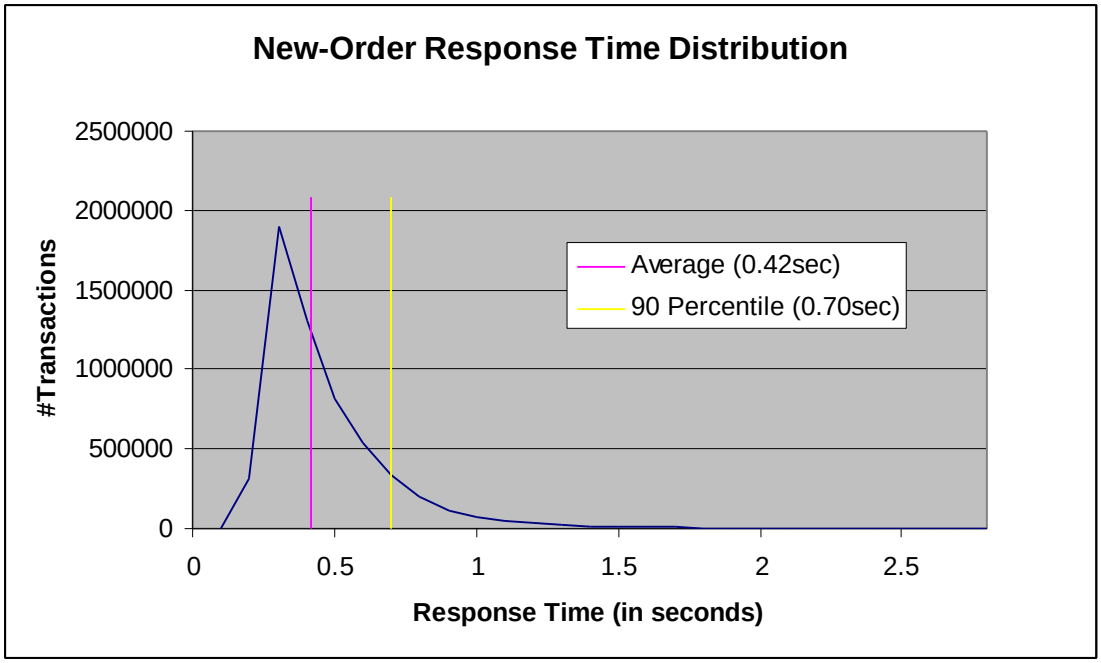


Figure 2.2 : Payment Response Time Distribution

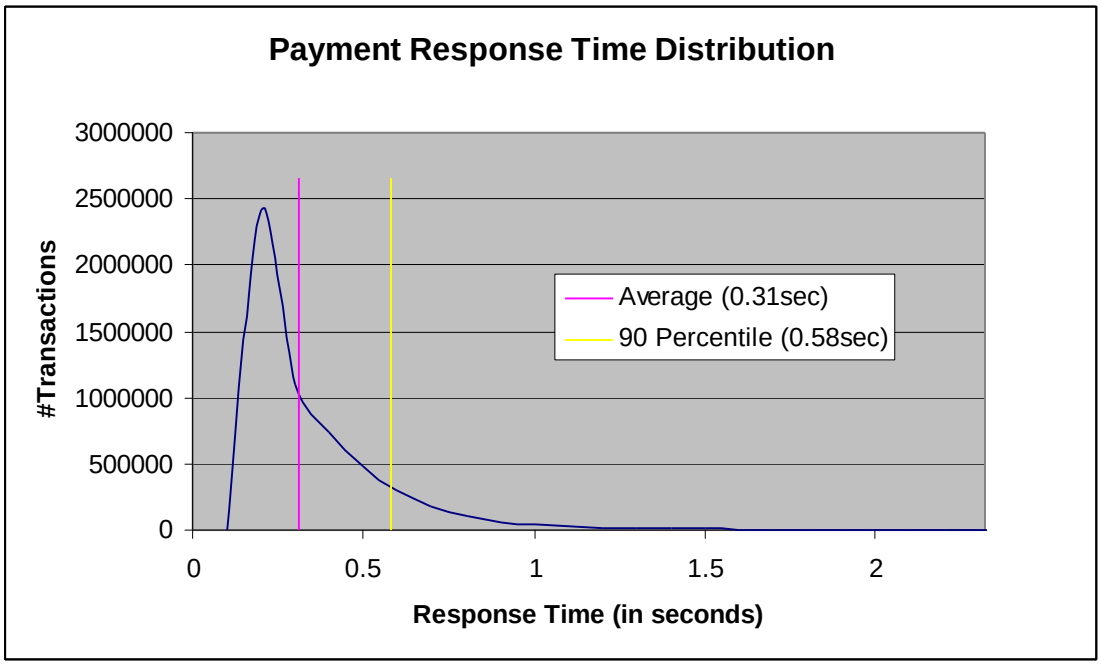


Figure 2.3 : Order-Status Response Time Distribution

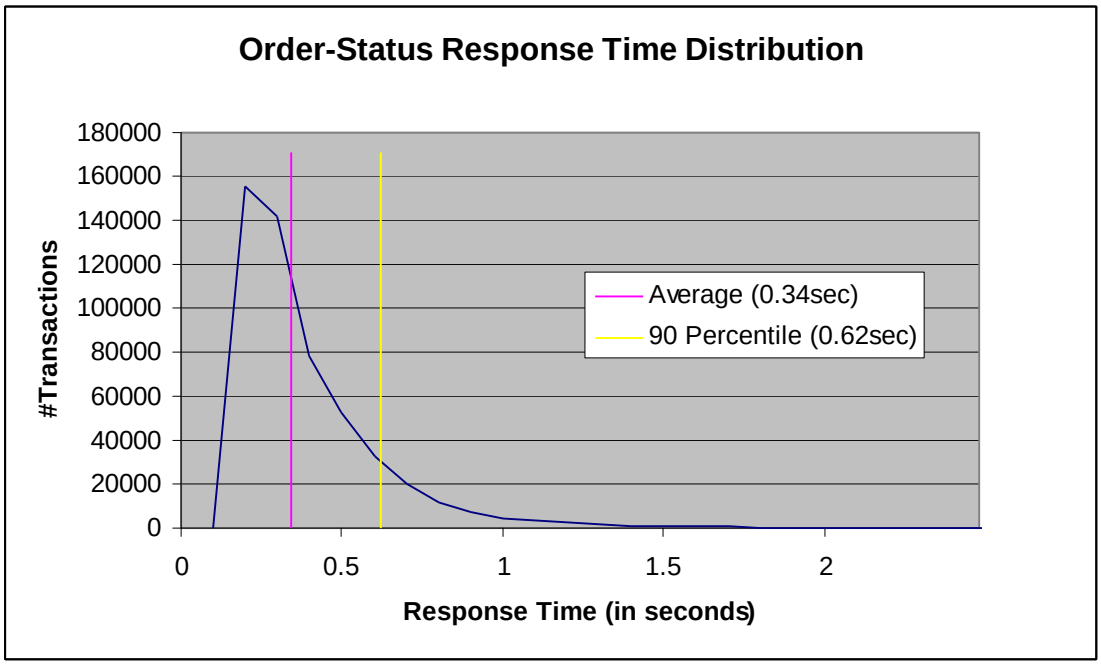


Figure 2.4 : Delivery Response Time Distribution

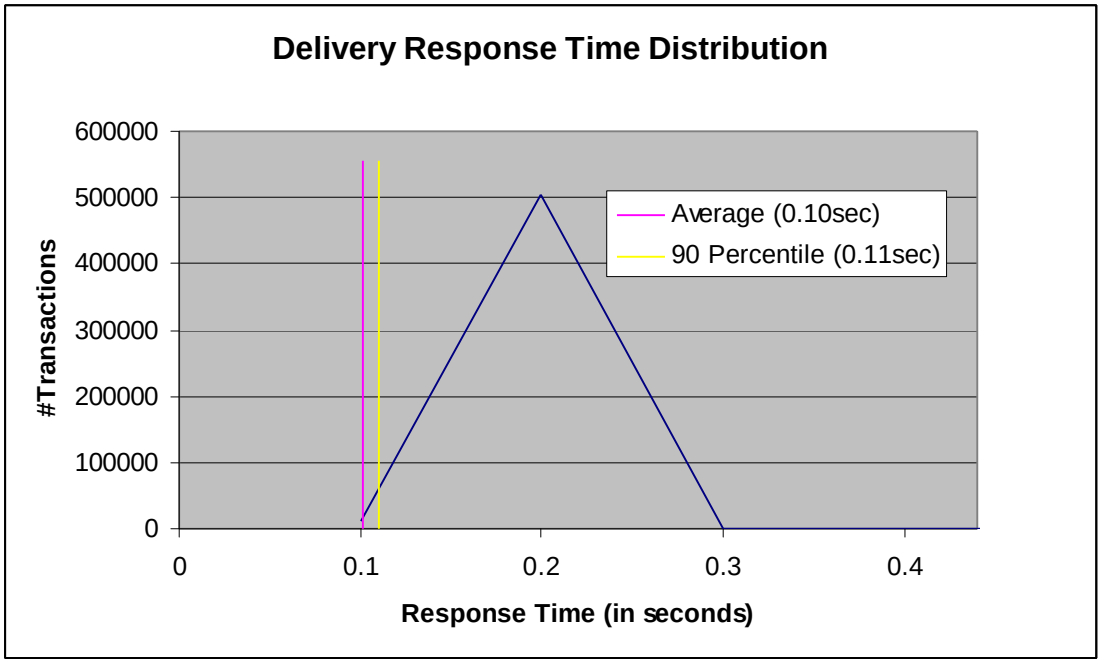
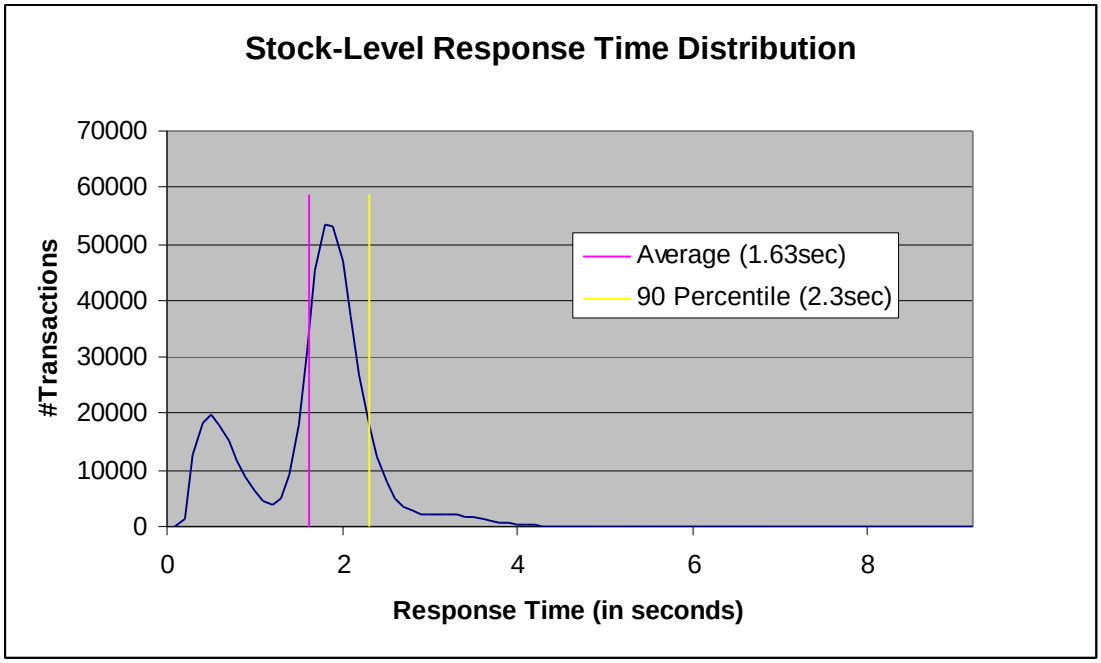


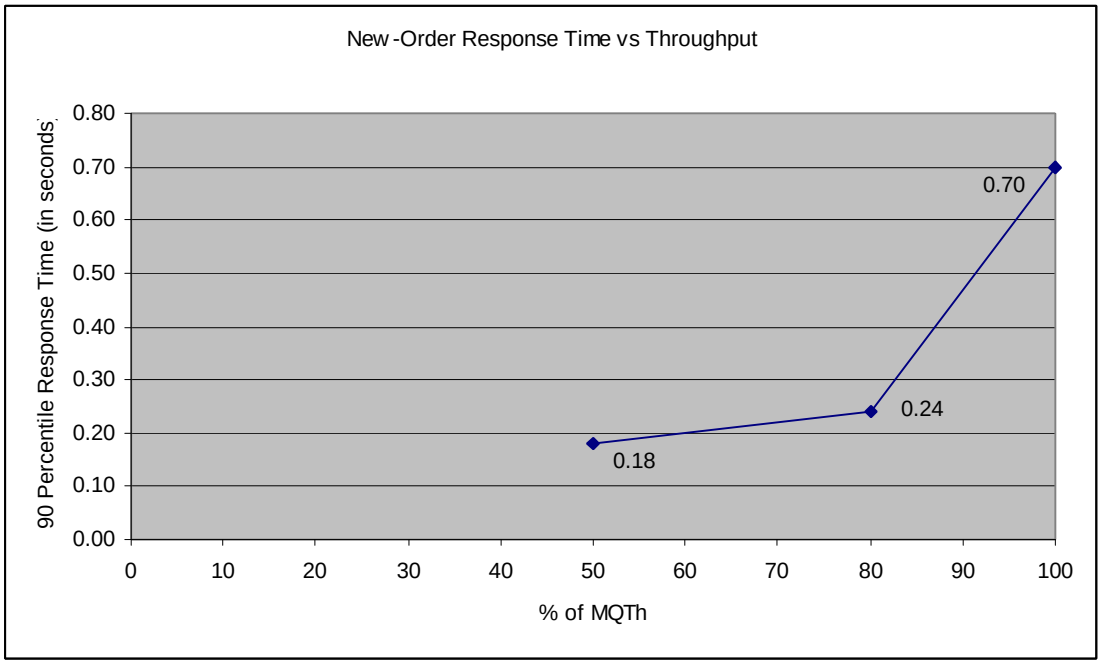
Figure 2.5 : Stock-Level Response Time Distribution



Response time versus Throughput Performance Curve

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

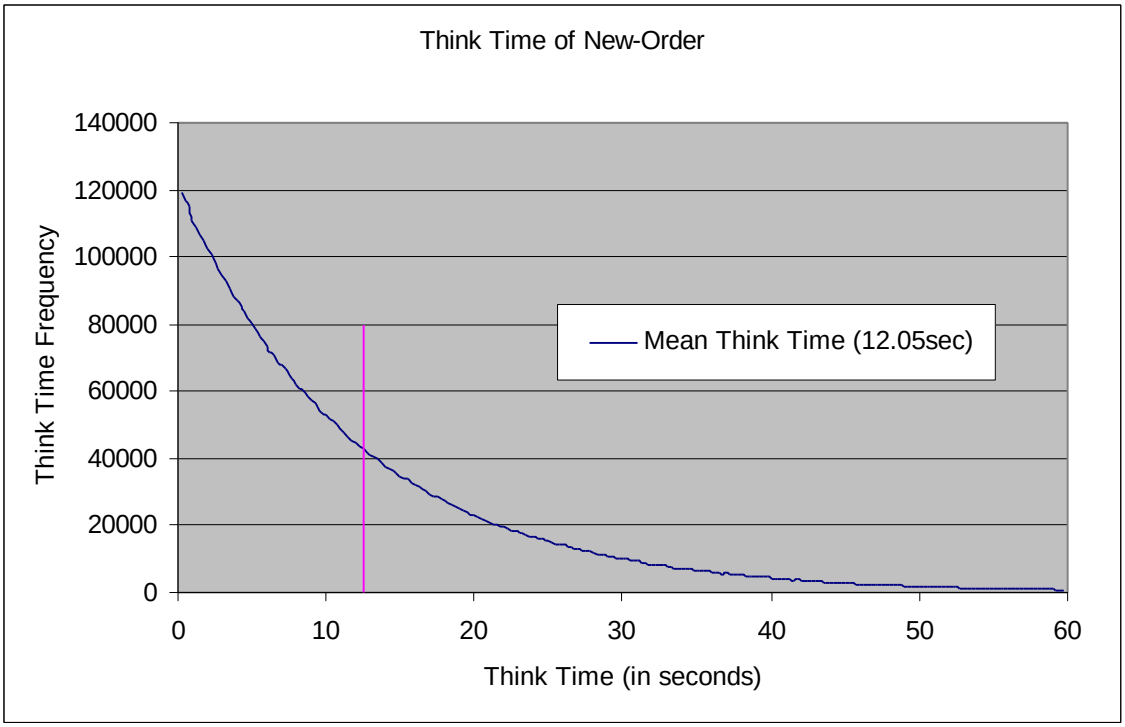
Figure 2.6 Response Time Performance vs. Throughput Curve



NEW-Order Think Time

Think Time frequency distribution curves (see Clause 5.6.3) must be reported for the New-Order transaction.

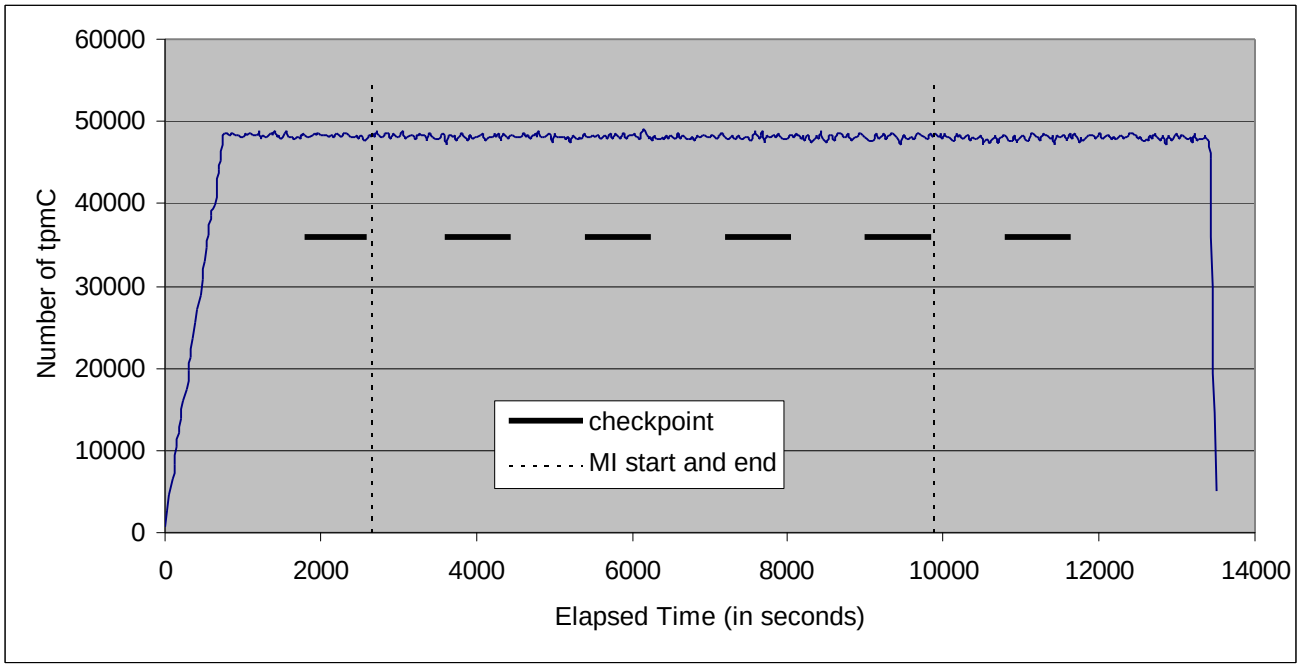
Figure 2.7 New-Order Think Time



New-Order Throughput vs. Elapsed Time

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

Figure 2.8 New Order Throughput vs. Elapsed Time



Steady State

The method used to determine that the SUT had reached a steady state prior to commencing the measurement interval must be disclosed.

Steady state was confirmed by the throughput data collected during the run and graphed in Figure 2.8.

Work Performed During Steady State

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

A checkpoint in Microsoft SQL Server writes to disk all updated memory pages that have not been yet actually written to disk. SQL Server recovery interval parameter was set to 60 to perform checkpoint at specific intervals. A checkpoint script, which issues specified number of checkpoint at specified (30 minutes) intervals, was started after all users logged in and sending transactions.

Measurement Period Duration and Checkpoint Duration

The start time and duration in seconds of at least the four (4) longest checkpoints during the Measurement Interval must be disclosed (see Clause 5.5.2.2 (2)).[Clause 8.1.6.11]
A statement of the duration of the measurement interval for the reported Maximum Qualified Throughput (tpmC) must be included.[Clause 8.1.6.12]

	Start	End	Duration (in second)
M.I.	06:06:50	08:06:50	7200
1st Checkpoint	06:22:18	06:36:24	846
2nd Checkpoint	06:52:17	07:06:04	827
3rd Checkpoint	07:22:17	07:36:22	845
4th Checkpoint	07:52:16	08:06:32	856

Regulation of 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.

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

Transaction Statistics

The percentage of the total mix for each transaction type must be disclosed. The percentage of New-Order transactions rolled back as a result of invalid item number must be disclosed. The average number of order-lines entered per New-Order transaction must be disclosed. The percentage of remote order lines per New-Order transaction must be disclosed. The percentage of remote Payment transactions must be disclosed. The percentage of customer selections by customer last name in the Payment and Order-Status transactions must be disclosed. The percentage of Delivery transactions skipped due to there being fewer than necessary orders in the New-Order table must be disclosed.

The above statistics are disclosed in Table 1.

Checkpoint Count and Location

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.

There was one checkpoint before measurement and four checkpoints during measurement.
The Time of the first checkpoint during the measurement interval is 928 seconds from the start of the measurement, and the checkpoint interval is 30 minutes.

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

Descriptions of RTE

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

The RTE used was the Microsoft BenchCraft RTE System. The RTE input parameters are listed in Appendix C.

Lost Terminal Connections

The number of terminal connections lost during the Measurement Interval must be disclosed.

No terminal connections were lost.

Emulated Components

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

AS configured for this test, the driver software emulates the traffic that would be observed from the users' PCs connected by Ethernet to the front-end clients using HTTP (HyperText Transfer Protocol) over TCP/IP. One tenth of a second (100 milli seconds) was added to each transaction time to compensate for the overhead of the Web browser.

Functional Diagrams and Detail of Driver System

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

The diagrams in figure 1.1 and 1.2 show the tested and priced benchmark configurations.

Network configurations and Driver system

The network configuration of both the tested services and 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.

Figure 1.1 and 1.2 in this report has the network configurations of both the tested system and the priced system.

Network Bandwidth

The bandwidth of the networks used in the tested/priced configuration must be disclosed.

The Database server contains one 1Gbps LAN adapter. The LAN adapter was connected to a 1000/100/10 LAN switch with 1Gbps bandwidth. 5 front-end clients were connected 1000/100/10 LAN switch with 100Mbps bandwidth. Each front-end clients has two 100Mbps adapter, one for connecting to a back-end database server and another one for connecting to RTE system. The network bandwidth between RTE system and the front-end clients is 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.

This configuration does not require any operator intervention to sustain eight hours of the reported throughput.

Clause 7 : Pricing Related Items

Hardware and Software Components

A detailed list of hardware and software used in the priced system must be reported. Each separately orderable item must have vendor part number, description, and release/revision level, and either general availability status or committed delivery data. 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 and effective date(s) of price(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.

The detailed list of all hardware and software for the priced configuration is listed in the system pricing summary.

Availability

The committed delivery date for general availability (availability date) of products used in the price calculation must be reported. When the priced system included products with different availability dates, the reported availability date for the priced system must be the date at which all components are committed to be available. The single date must be reported on the first page of the Executive Summary. All availability dates,whether for individual components or for the SUT as a whole, must be disclosed to a precision of one day.

All the components used in the priced system are currently available with the exception of:

NEC Express5800/140Rb-4 will be available by July 31, 2002.

Throughput, and Price Performance

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 48,150.72 tpmC
- Price per tpmC : $ 6.46 per tpmC
- Total 3-yesr cost of ownership : $ 311,093
- Availability : July 31, 2002

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

This system is being 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.*

None

Clause 8 : Audit Related Items

Auditor's Report

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.

Next page contains the complete independent auditor's report by Francois Raab and Bradley Askins of InfoSizing Inc. for the test described in this report.

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 this TPC Benchmark™ C Full Disclosure Report should be sent to:
Transaction Processing Performance Council
c/o Shanley Public Relations
777 North First Street, Suite 6000
San Jose, CA 95112-6311
or your local NEC office.

INFO SIZING

TPC TRANSACTION PROCESSING PERFORMANCE COUNCIL CERTIFIED AUDITOR

Benchmark Sponsor: NEC Corporation
Katsuya Funukawa
1-10, Nisshincho,
Fuchu City
Tokyo
Fuchu, 183-8501

June 12, 2002

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

Platform:	**NEC Express 5800/140Rb-4 C/S**
Operating system:	**Microsoft Windows 2000 Advanced Server**
Database Manager:	**Microsoft SQL Server 2000 Enterprise Edition**
Transaction Manager:	**Microsoft COM+**

The results were:

CPU's Speed	Memory	Disks	NewOrder 90% Response Time	**tpmC**
Server: NEC Express 5800/140Rb-4				
4 x Xeon MP (1.6GHz)	8 GB Main (1MB L3 Cache per processor)	180 x 18 GB	0.70 Seconds	**48,150.72**
NEC Express 5800/120Lf (Specification for each)				
2 x Pentium III (1.0 GHz)	1 GB Main (256 KB L2 Cache per processor	1 x 18 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

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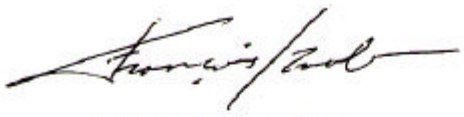
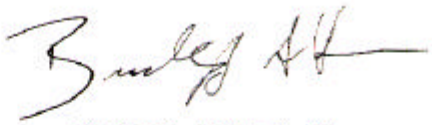
- The database was properly scaled and populated
- The required ACID properties were met
- The transactions were correctly implemented
- Input data was generated according to the specified percentages
- The transaction cycle times included the required keying and think times
- The reported response times 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

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Appendix A : Application Source Code

webclnt.dsp

```
# Microsoft Developer Studio Project File   - Name="webclnt"  - Package Owner=<4>
# Microsoft Developer Studio Generated Build File, Format Version 5.00
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Application" 0x0101  1

CFG=webclnt  - Win32 Release
!MESSAGE This is not a valid makefile. To build this project using NMAKE,
!MESSAGE use the Export Makefile command and run
!MESSAGE
!MESSAGE NMAKE /f "Webclnt.mak".
!MESSAGE
!MESSAGE You can specify a configuration when run  ning NMAKE
!MESSAGE by defining the macro CFG on the command line. For example:
!MESSAGE
!MESSAGE NMAKE /f "Webclnt.mak" CFG="webclnt   - Win32 Release"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "webclnt  - Win32 Release" (based on "Win32 (x86) Application")
!MESSAGE "webclnt  - Win32 Debug" (based on "Win32 (x86) Application")
!MESSAGE

# Begin Project
# PROP Scc_ProjName ""
# PROP Scc_LocalPath ""
CPP=cl.exe
MTL=midl.exe
RSC=rc.exe

!IF  "$(CFG)" == "webclnt  - Win32 Relea se"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir ". \Release"
# PROP BASE Intermediate_Dir ". \Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ". \Release"
# PROP Intermedia te_Dir ".\Release"
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /c
# ADD CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /FD /c
# ADD BASE MTL /nologo /D "NDEBUG" /win32
# ADD MTL /nologo  /D "NDEBUG" /mktyplib203 /win32
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /machine:I386
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib o   dbc32.lib

odbccp32.lib /nologo /subsystem:windows /machine:I386

!ELSEIF  "$(CFG)" == "webclnt  - Win32 Debug"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir ". \Debug"
# PROP BASE Intermediate_Dir ". \Debug"
# PROP BASE Tar get_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \Debug"
# PROP Intermediate_Dir ". \Debug"
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS"
/YX /c
# ADD CPP /nologo /W3 /Gm /GX   /Zi /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS" /YX
/FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nolo go
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /debug /machine:I386
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib

odbccp32.lib /nologo /subsystem:windows /debug /machine:I386

!ENDIF

# Begin Target

# Name "webclnt  - Win32 Release"
# Name "webclnt  - Win32 Debug"
# End Target
# End Project
```

webclnt.dsw

```
Microsoft Developer Studio Workspace File, Format Version 6.00
# WARNING: DO NOT EDIT OR DELETE THIS WORKSPACE FILE!

###############################################################################   ##########

Project: "db_dblib_dll"=. \db_dblib_dll \db_dblib_dll.dsp  - Package Owner=<4>

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

###############################################################################

Project: "db_odbc_dll"=. \db_odbc_dll \db_odbc_dll.dsp - Package Owner=<4>

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

###############################################################################

Project: "install"=. \install\install.dsp - Package Owner=<4>

Package=<5>
{{{
}}}

Package=<4>
{{{
    Begin Project Dependency
    Project_Dep_Name isapi_dll
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name tuxapp
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name db_dblib_dll
    End Project Dependenc y
    Begin Project Dependency
    Project_Dep_Name db_odbc_dll
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name tm_com_dll
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name tm_tuxedo_dll
    End Proje ct Dependency
    Begin Project Dependency
    Project_Dep_Name tpcc_com_all
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name tpcc_com_ps
    End Project Dependency
}}}

###############################################################   ####################

Project: "isapi_dll"=. \isapi_dll \isapi_dll.dsp  - Package Owner=<4>

Package=<5>
{{{
}}}

Package=<4>
{{{
    Begin Project Dependency
    Project_Dep_Name db_dblib_dll
    End Project Dependency
    Begin Project Dependency
    Proje ct_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 tm_com_dll
    End Project Dependency
    Begin Project Dependen cy
    Project_Dep_Name tm_encina_dll
    End Project Dependency
}}}

###############################################################################

Project: "tm_com_dll"=. \tm_com_dll \tm_com_dll.dsp  - Package Owner=<4>

Package=<5>
{{{
}}}

Package=<4>
{{{
    Begin Project Dependency
    Project_Dep_Name tpcc_com_ps
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name tpcc_com_all
    End Project Dependency
}}}

###############################################################   ##########

Project: "tm_encina_dll"=. \tm_encina_dll \tm_encina_dll.dsp  - Package Owner=<4>

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

###############################################################################

Project: "tm_tuxedo_dll"=. \tm_tuxedo_dll \tm_tuxedo_dll.dsp  - Package Owner=<4>

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

###############################################################################

Project: "tpcc_com_all"=. \tpcc_com_all \tpcc_com_all.dsp  - Package Owner=<4>

Package=<5>
{{{
}}}

Package=<4>
{{{
    Begin Project Dependency
    Project_Dep_Name tpcc_com_ps
    End Project Dependency
}}}

###############################################################################

Project: "tpcc_com_ps"=. \tpcc_com_ps \tpcc_com_ps.dsp  - Package Owner=<4>

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

###############################################################################

Project: "tuxapp"=. \tuxapp\tuxapp.dsp  - Package Owner=<4>

Package=<5>
{{{
}}}

Package=<4>
{{{
    Begin Project Depend ency
    Project_Dep_Name db_dblib_dll
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name db_odbc_dll
    End Project Dependency
}}}

###############################################################################

Global:

Package=<5>
{{{
}}}

Package=<3>
{{{
}}}

###############################################################################
```

common/src/error.h

```
/*          FILE:                       ERROR.H
 *                                                  Microsoft TPC -C Kit Ver.
4.20.000
 *                                                  Copyright Microsoft, 1999
```

```
 *              All Rights Re served
 *
 *                                                      Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
 *
 *              PURPOSE:        Header file for error exception classes.
 *
 *  Change history:
 *                              4.20.000  - updated rev number to match kit
 *                              4.21.000  - fixed bug: ~CBaseErr neede d to be declared
virtual
 */

#pragma once

#ifndef _INC_STRING
                #include <string.h>
#endif

const int m_szMsg_size = 512;
const int m_szApp_size = 64;
const int m_szLoc_size = 64;

//error message structure used in ErrorText routines
typedef struct _SERRO RMSG
{
                int                             iError;
                //error id of message
                char            szMsg[256];                             //message to
sent to browser
} SERRORMSG;

typedef enum _ErrorLevel
{
                ERR_FATAL_LEVEL                                         = 1,
                ERR_WARNING_LEVEL                       = 2,
                ERR_INFORMATION_LEVEL           = 3
} ErrorLevel;


#define ERR_TYPE_LOGIC
                        -1                              //logic error in program;
internal error
#define ERR_SUCCESS
                        0                               //success (a
non-error error)
#define ERR_BAD_ITEM_ID
                        1                               //expected abort record in
txnRecord
#define ERR_TYPE_DELIVERY_POST
                2                               //expected delivery post failed
#define         ERR_TYPE_WEBDLL
                        3                               //tpcc web
generated error
#define         ERR_TYPE_SQL
                        4                               //sql server generated
error
#define         ERR_TYPE_DBLIB
                        5                               //dblib
generated error
#define         ERR_TYPE_ODBC
                        6                               //odbc generated error

#define ERR_TYPE_SOCKET
                        7                               //error on communication
socket client rte only
#define ERR_TYPE_DEADLOCK
                        8                               //dblib and odbc only deadlock condition
#define ERR_TYPE_COM
                        9                               //error from COM call

#define ERR_TYPE_TUXEDO
                        10                              //tuxedo error

#define ERR_TYPE_OS
                        11                              //operating
system error
#define ERR_TYPE_MEMORY
                        12                              //memory allocation error

#define ERR_TYPE_TPCC_ODBC
                13                              //error from tpcc odbc txn module

#define ERR_TYPE_TPCC_DBLIB
                14                              //error from tpcc dblib txn module

#define ERR_TYPE_DELISRV
                15                              //delivery server error

#define ERR_TYPE_TXNLOG
                        16                              //txn log error

#define ERR_TYPE_BCCONN
                        17                              //Benchcraft connection
class
#define ERR_TYPE_TPCC_CONN
                18                              //Benchcraft connection class

#define ERR_TYPE_ENCINA
                        19                              //Encina error

#define ERR_TYPE_COMPONENT
                20                              //error from COM component

#define ERR_TYPE_RTE
                        21                              //Benchcraft rte

#define ERR_TYPE_AUTOMATION
                22                              //Benchcraft automation errors

#define ERR_TYPE_DRIVER
                        23                              //Driver engine errors

#define ERR_TYPE_RTE_BA SE
                24                              //Framework errors

#define         ERR_BUF_OVERFLOW
                        25                              //Buffer overflow during
receive
// TPC-W error types
#define ERR_TYPE_TPCW_CONN
                50                              //Benchcraft connection class

#define ERR_TYPE_TPCW_HTML
                        51                              //error from TpcwHtml dll

#define ERR_TYPE_TPCW_USER
                        52                              //error from TPC -W user class

#define ERR_TYPE_TPCW_ENG_BASE
                        53

#define ERR_TYPE_TPCW_ENG_OS
                        54

#define ERR_TYPE_HTML_RESP
                        55

#define ERR_TYPE_TPCW_ODBC
                        56

#define ERR_TYPE_SCHANNEL
                        57


#define ERR_INS_MEMO RY                                 "Insufficient Memory to
continue."
#define ERR_UNKNOWN                                                     "Unknown
error."
#define ERR_MSG_BUF_SIZE                512
#define  INV_ERROR_CODE                         -1
#define ERR_INS_BUF_OVERFLOW    "Insufficient Buffer size to recieve HTML pages."


class CBaseErr
{
public:

                CBaseErr(LPCTSTR szLoc = NULL)
                {
                                m_idMsg                         = INV_ERROR_CODE;


                                if (szLoc)
                                {
                                                m_szLoc = new char[m_szLoc_size];
                                                strcpy(m_szLoc, szLoc);
                                }
                                else
                                                m_szLoc         = NULL;

                                m_szApp                         = new char[m_szApp_size];
                                GetModuleFileName(GetModuleHandle(NULL),   m_szApp,
m_szApp_size);
                }



                CBaseErr(int idMsg, LPCTSTR szLoc = NULL)
                {
                                m_idMsg                         = idMsg;


                                if (szLoc)
                                {
                                                m_szLoc = new char[m_szLoc_size];
                                                strcpy(m_szLoc, szLoc);
                                }
                                else
                                                m_szLoc         = NULL;

                                m_szApp                         = new char[m_szApp_size];
                                GetModuleFileName(GetModuleHandle(NULL), m_szApp,
m_szApp_size);
                }

                virtual ~CBaseErr(void)
                {
                                if (m_szApp)
                                                delete [] m_szApp;

                                if (m_szLoc)
                                                delete [] m_szLoc;
                };

                virtual void Draw(HWND hwnd, LPCTSTR szStr = NULL)
                {
                                int                             j = 0;
                                char            szTmp[512];

                                if (szStr)
                                                j = wsprintf(szTmp, "%s \n",szStr);
                                if (ErrorNum() != INV_ERROR_CODE)
                                                j += wsprintf(szTmp+j, "Error = %d  \n",
ErrorNum());
                                if (m_szLoc)
                                                j += wsprintf(szTmp+j, "Location = %s  \n",
GetLocation());

                                j += wsprintf(szTmp+j, "%s \n", ErrorText());

                                ::MessageBox(hwnd, szTmp, m_szApp, MB_OK);
                }

                char *GetApp(void) { return m_szApp; }
                char *GetLocation(void) { return m_szLoc; }
                virtual int ErrorNum() { return m_idMsg; }



                virtual int ErrorType() = 0;                    // a value which
distinguishes the kind of error that occurred
                virtual char *ErrorText() = 0; // a string (i.e., human readable)
representation of the error


protected:
                char            *m_szApp;
                char            *m_szLoc;       // code location where the error
occurred
                int                             m_idMsg;
                //short         m_errType;
};

class CSocketErr : public CBaseErr
{
public:
                enum Action
                {
                                eNone = 0,
                                eSend,
                                eSocket,
                                eBind,
                                eConnect,
                                eListen,
                                eHost,
                                eRecv,
                                eGetHostByName,
                                eWSACreateEvent,
                                eWSASend,
                                eWSASendImage,
                                eWSAGetOverlappedResult,
                                eWSARecv,
                                eWSARecvImage,
                                eWSAWaitForMultipleEvents,
                                eWSAStartup,
                                eWSAResetEvent,
                                eNonRetryable,
                };

                CSocketErr(Action eAction, LPCTSTR szLocation = NULL);

                ~CSocketErr()
                {
                                if (m_szErrorText != NULL)
                                                delete [] m_szErrorText;
                };

                Action          m_eAction;
                char            *m_szErrorText;

                int ErrorType() { return ERR_TYPE_SOCKET;};
                char *ErrorText(void);

};

class CSystemErr : public CBaseErr
{
public:
                enum Action
                {
                                eNone = 0,
                                eTransactNamedPipe,
                                eWaitNamedPipe,
                                eSetNamedPipeHandleState,
                                eCreateFile,
                                eCreateProcess,
                                eCallNamedPipe,
                                eCreateEvent,
                                eCreateThread,
                                eVirtualAlloc,
                                eReadFile = 10,
                                eWriteFile,
                                eMapViewOfFile,
                                eCreateFileMapping,
                                eInitializeSecurityDescriptor,
                                eSetSecurityDescriptorDacl,
                                eCreateNamedPipe,
                                eConnectNamedPipe,
                                eWaitForSingleObject,
                                eRegOpenKeyEx,
                                eRegQueryValueEx = 20,
                                ebeginthread,
                                eRegEnumValue,
                                eRegSetValueEx,
                                eRegCreateKeyEx,
                                eWaitForMultipleObjects,
                                eRegisterClassEx,
                                eCreateWindow,
                                eCreateSemaphore,
                                eFSeek,
                                eFRead,
                                eFWrite,
                                eTmpFile,
                                eSetFilePointer,
                                eNew,
                };

                                        CSystemErr(Action eAction, LPCTSTR
szLocation);
                                        CSystemErr(int iError, Action eAction,
LPCTSTR szLocation);
                int                     ErrorType() { return ERR_TYPE_OS;};
                char            *ErrorText(void);
                void            Draw(HWND hwnd, LPCTSTR  szStr = NULL);

                Action          m_eAction;

private:
                char m_szMsg[ERR_MSG_BUF_SIZE];
};

class CMemoryErr : public CBaseErr
{
public:
                CMemoryErr();

                int ErrorType() {return ERR_TYPE_MEMORY;}
                char *ErrorText() {return ERR_INS_MEMORY;}
};
```

```
class CBufferOverflo wErr : public CBaseErr
{
            public:
            CBufferOverflowErr(int,LPTSTR);

            int ErrorType() {return ERR_BUF_OVERFLOW;}

            char *ErrorText() {return ERR_INS_BUF_OVERFLOW;}
};
```

common/src/ReadRegistry.cpp

```
/*          FILE:                       READREGISTRY.CPP
 *                                                  Microsoft TPC -C Kit Ver.
4.20.000
 *                                                  Copyright Microsoft, 1999
 *            All Rights Reserved
 *
 *                                                  not yet audited
 *
 *          PURPOSE:    Implementation for TPC -C Tuxedo class.
 *          Contact:    Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                      4.20.000 - first versi on
 */


/* 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 ReadTPCCRe gistrySettings( 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 datab ase 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]) )
                                    pReg->eDB_Protocol = DBLIB;
            }

            pReg->eTxnMon = None;
            // determine txn monitor to use; may be either TUXEDO, or blank
            size = sizeof(szTmp);
            if ( RegQueryValueEx(hKey, "TxnMonitor",   0, &type, (BYTE *)&szTmp,
&size) == ERROR_SUCCESS )
            {
                        if ( !stricmp(szTmp, szTxnMonNames[TUXEDO]) )
                                    pReg->eTxnMon = TUXEDO;
                        else if ( !stricmp(szTmp, szTxnMonNames[ENCINA]) )
                                    pReg->eTxnMon = ENCINA;
                        else if ( !stricmp(szTmp, szTxnMonNames[COM  ]) )
                                    pReg->eTxnMon = COM;
            }

            pReg->bCOM_SinglePool = FALSE;
            size = sizeof(szTmp);
            if ( RegQueryValueEx(hKey, "COM_SinglePool", 0, &type, (BYTE
*)&szTmp, &size) == ERROR_SUCCESS )
            {
                        if ( !stricmp(szTmp, "YES") )
                                    pReg->bCOM_SinglePool = TRUE;
            }

            pReg->dwMaxConnections = 0;
            size = sizeof(dwTmp);
            if ( ( RegQueryValueEx(hKey, "MaxConnections", 0, &type,
(LPBYTE)&dwTmp, &size) == ERROR_SUCCESS )
                        && (type == REG_DWORD) )
                        pReg->dwMaxConnections = dwTmp;

            pReg->dwMaxPendingDeliveries = 0;
            size = sizeof(dwTmp);
            if ( ( RegQueryValueEx(hKey, "MaxPendingDeliveries", 0, &type,
(LPBYTE)&dwTmp, &size) == ERROR_SUCCESS )
                        && (type == REG_DWORD) )
                        pReg->dwMaxPendingDeliveries = dwTmp;

            pReg->dwNumberOfDeliveryThreads = 0;
            size = sizeof(dwTmp);
            if ( ( RegQueryValueEx(hKey, "NumberOfDeliveryThreads", 0, &type,
(LPBYTE)&dwTmp, &size) == ERROR_SUCCESS )
                        && (type == REG_DWORD) )
                        pReg->dwNumberOfDeliveryThreads = dwTmp;

            size = sizeof( pReg ->szPath );
            if ( RegQueryValueEx(hKey, "Path", 0, &type,   (BYTE *)&pReg ->szPath,
&size) != ERROR_SUCCESS )
                        pReg->szPath[0] = 0;

            size = sizeof( pReg ->szDbServer );
            if ( RegQueryValueEx(hKey, "DbServer", 0, &type, (BYTE *)&pReg   -
>szDbServer, &size) != ERROR_SUCCESS )
                        pReg->szDbServer[0] = 0;

            size = sizeof(  pReg ->szDbName );
            if ( RegQueryValueEx(hKey, "DbName", 0, &type, (BYTE *)&pReg   -
>szDbName, &size) != ERROR_SUCCESS )
                        pReg->szDbName[0] = 0;

            size = sizeof( pReg ->szDbUser );
            if ( RegQueryValueEx(hKey, "DbUser", 0, &type, (BYTE *)&pReg   -
>szDbUser, &size ) != ERROR_SUCCESS )
                        pReg->szDbUser[0] = 0;

            size = sizeof( pReg ->szDbPassword );
            if ( RegQueryValueEx(hKey, "DbPassword", 0, &type, (BYTE *)&pReg   -
>szDbPassword, &size) != ERROR_SUCCESS )
                        pReg->szDbPassword[0] = 0;

            RegCloseKey(hKey);

            return FALSE ;
}
```

common/src/ReadRegistry.h

```
/*          FILE:                       ReadRegistry.h
 *                                                  Microsoft TPC -C Kit Ver.
4.20.000
 *                                                  Copyright Microsoft, 1999
 *            All Rights Reserved
 *
 *                                                  not audited
 *
 *          PURPOSE:    Header for registry related code.
 *
 *  Change history:
 *                      4.20.000 - first version
 */

enum DBPROTOCOL { Unspecified, ODBC, DBLIB };
const char *szDBNames[] = { "Unspecified", "ODBC", "DBLIB" };

enum TXNMON { None, TUXEDO, ENCINA, COM };
const char *szTxnMonNames[] = { "NONE", "TUXEDO", "ENCINA", "COM" };

//This structure defines the data necessary to keep distinct for each terminal or
client connection.
typedef struct _TPCCREGISTRYDATA
{
            enum DBPROTOCOL eDB_Protocol;
            enum TXNMON eTxnMon;
            BOOL bCOM_SinglePool;
            DWORD dwMaxConnections;
            DWORD dwMaxPendin gDeliveries;
            DWORD dwNumberOfDeliveryThreads;
            char szPath[128];
            char szDbServer[32];
            char szDbName[32];
            char szDbUser[32];
            char szDbPassword[32];
} TPCCREGISTRYDATA, *PTPCCREGISTRYDATA;

BOOL ReadTPCCRegistrySettings( TPCCREGISTRYDATA *pReg );
```

common/src/trans.h

```
/*          FILE:                       TRANS.H
 *                                                  Microsoft TPC -C Kit Ver.
4.20.000
 *                                                  Copyright Microsoft, 1999
 *            All Rights Reserved
 *
 *                                                  Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
 *
 *          PURPOSE:    Header file for TPC -C structure templates.
 *
 *  Change history:
 *                      4.20.000 - updated rev number to match kit
 */
#pragma once

// String length constants
#define SERVER_NAME_LEN          20
#define DATABASE_NAME_LEN        20
#define USER_NAME_LEN            20
#define PASSWORD_LEN             20
#define TABLE_NAME_LEN           20
#define I_DATA_LEN               50
#define I_NAME_LEN               24
#define BRAND_LEN                 1
#define LAST_NAME_LEN            16
#define W_NAME_LEN               10
#define ADDRESS_LEN              20
#define STATE_LEN                 2
#define ZIP_LEN                   9
#define S_DIST_LEN               24
#define S_DATA_LEN               50
#define D_NAME_LEN               10
#define FIRST_NAME_LE N          16
#define MIDDLE_NAME_LEN           2
#define PHONE_LEN                16
#define DATETIME_LEN             30
#define CREDIT_LEN                2
#define C_DATA_LEN              250
#define H_DATA_LEN               24
#define DIST_INFO_LEN            24
#define MAX_OL_NEW_ORDER_ITEMS   15
#define MAX_OL_ORDER_STATUS_ITEMS 15
#define STATUS_LEN               25
#define OL_DIST_INFO_LEN                    24

// TIMESTAMP_STRUCT is provided by the ODBC header file sqltypes.h, but is not
available
// when compiling with dblib, so redefined here.  Note: we are using the symbol
"__SQLTYPES"
// (declared in sqltypes.h) as a way to determine if TIMESTAMP_STRUCT has been
declared.
#ifndef __SQLTYPES
            typedef struct
            {
                                    short
            /* SQLSMALLINT */       year;
                                    unsigned short              /*
SQLUSMALLINT */             month;
                                    unsigned short              /*
SQLUSMALLINT */             day;
                                    unsigned short              /*
SQLUSMALLINT */             hour;
                                    unsigned short              /*
SQLUSMALLINT */             minute;
                                    unsigned short              /*
SQLUSMALLINT */             second;
                                    unsigned long /* SQLUINTEGE R */
            fraction;
            } TIMESTAMP_STRUCT;
#endif

// possible values for exec_status_code after transaction completes
enum EXEC_STATUS
{
            eOK,                                        // 0        "Transaction
commited."
            eInvalidItem, // 1          "Item number is not valid."
            eDeliveryFailed             // 2        "Delivery Post Fai led."
};

// transaction structures
typedef struct
{
            // input params
            short                                                   ol_i_id;
            ol_supply_w_id;
            long                                                    ol_quantity;
            short

            // output params
            char
            ol_i_name[I_NAME_LEN+1];
            char
            ol_brand_generic[BRAND_LEN+1];
            double                                                  ol_i_price;
            double                                                  ol_amount;
            short                                                   ol_stock;
} OL_NEW_ORDER_DATA;

typedef struct
{
            // input params
            short                       w_id;
            short                       d_id;
            long                        c_id;
            short                       o_ol_cnt;

            // output params
            EXEC_STATUS                             exec_status_code;
            char                        c_last[LAST_NAME_LEN+1];
            char                        c_credit[CREDIT_LEN+1];
            double                      c_discount;
            double                      w_tax;
            double                      d_tax;
            long                                    o_id;
            short
            o_commit_flag;
            TIMESTAMP_STR UCT           o_entry_d;
            short                       o_all_local;
            double                      total_amount;
            OL_NEW_ORDER_DATA           OL[MAX_OL_NEW_ORDER_ITEMS];
} NEW_ORDER_DATA, *PNEW_ORDER_DATA;

typedef struct
{
            // input params
            short                                   w_id;
            short                                   d_id;
            long                                    c_id;
            short                                   c_d_id;
            short                                   c_w_id;
            double                                  h_amount;
            char                         c_last[LAST_NAME_LEN+1];

            // output params
            EXEC_STATUS                             exec_status_code;
```

```
        TIMESTAMP_STRUCT        h_date;
        char                            w_street_1[ADDRESS_LEN+1];
        char                            w_street_2[ADDRESS_LEN+1];
        char                            w_city[ADDRESS_LEN+1];
        char                            w_state[STATE_LEN+1];
        char                            w_zip[ZIP_LEN+1];
        char                            d_street_1[ADDRESS_LEN+1];
        char                            d_street_2[ADDRESS_LEN+1];
        char                            d_city[ADDRESS_LEN+1];
        char                            d_state[STATE_LEN+1];
        char                        d_zip[ZIP_LEN+1];
        char                            c_first[FIRST_NAME_LEN+1];
        char                            c_middle[MIDDLE_NAME_LEN +
1];
        char                            c_street_1[ADDRESS_LEN+1];
        char                            c_street_2[ADDRESS_LEN+1];
        char                            c_city[ADDRESS_LEN+1];
        char                            c_state[STATE_LEN+1];
        char                            c_zip[ZIP_LEN+1];
        char                            c_phone[PHONE_LEN+1];
        TIMESTAMP_STRUCT        c_since;
        char                            c_credit[CREDIT_LEN+1];
        double                          c_credit_lim;
        double                          c_discount;
        double                          c_balance;
        char                            c_data[200+1];
} PAYMENT_DATA, *PPAYMENT_DATA;

typedef struct
{
        long                            ol_i_id;
        short                           ol_supply_w_id;
        short                           ol_quantity;
        double                          ol_amount;
        TIMESTAMP_STRUCT        ol_delivery_d;
} OL_ORDER_STATUS_DATA;

typedef struct
{       // input params
        short           w_id;
        short           d_id;
        long            c_id;
        char            c_last[LAST_NAME_LEN+1];

        // output params
        EXEC_STATUS                     exec_status_code;
        char            c_first[FIRST_NAME_LEN+1];
        char            c_middle[MIDDLE_NAME_LEN+1];
        double          c_balance;
        long            o_id;
        TIMESTAMP_STRUCT        o_entry_d;
        short           o_carrier_id;
        OL_ORDER_STATUS_DATA OL[MAX_OL_ORDER_STATUS_ITEMS];
        short           o_ol_cnt;
} ORDER_STATUS_DATA, *PORDER_STATUS_DATA;


typedef struct
{       // input params
        short                   w_id;
        short                   o_carrier_id;

        // output params
        EXEC_STATUS                     exec_status_code;
        SYSTEMTIME                      queue_time;
        long                                    o_id[10];
        // id's of delivered orders for districts 1 to 10
} DELIVERY_DATA, *PDELIVERY_DATA;

//This structure is used for posting delivery transactions and for writing them
to the delivery server.
typedef struct _DELIVERY_TRANSACTION
{
        SYSTEMTIME      queue;                                  //time
delivery transaction queued
        short                   w_id;
        //delivery warehouse
        short                   o_carrier_id; //carrier id
} DELIVERY_TRANSACTION;

typedef struct
{       // input params
        short                                   w_id;
        short                                   d_id;
        short                                   threshold;

        // output params
        EXEC_STATUS                     exec_status_code;
        long                                    low_stock;
} STOCK_LEVEL_DATA, *PSTOCK_LEVEL_DATA;
```

common/src/txn_base.h

```
/*              FILE:                   TXN_BASE.H
 *                                      Microsoft TPC -C Kit Ver.
4.20.000
 *                                      Copyright Microsoft, 1999
 *        All Rights Reserved
 *
 *                                      Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
 *
 *              PURPOSE:        Header file for TPC -C txn class implementation.
 *
 *  Change history:
 *                          4.20.000  - updated rev number to match kit
 */

#pragma once

// need to declare functions for import, unless define has already been created
// by the DLL's .cpp module for export.
#ifndef DllDecl
#define DllDecl   __declspec( dllimport )
#endif

class DllDecl CTPCC_BASE
{               public:
                        CTPCC_BASE(void) {};
                        virtual ~CTPCC_BASE(void) {};

                        virtual PNEW_ORDER_DATA
                BuffAddr_NewOrder()                     = 0;
                        virtual PPAYMENT_DATA
                BuffAddr_Payment()                      = 0;
                        virtual PDELIVERY_DATA
                BuffAddr_Delivery()                     = 0;
                        virtual PSTOCK_LEVEL_DATA    BuffAddr_StockLevel()
                = 0;
                        virtual PORDER_STATU S_DATA  BuffAddr_OrderStatus()
                = 0;

                        virtual void NewOrder                   () = 0;
                        virtual void Payment                    () = 0;
                        virtual void Delivery                   () = 0;
                        virtual void StockLevel                 () = 0;
                        virtual void OrderStatus     () = 0;
};
```

common/txnlog/include/rtetime.h

```
/* FILE: rtetime .h : header file
 * Copyright 1997 Microsoft Corp., All rights reserved.
 *
 * Source code licensed to Tandem Computers  for Internal
 * use only.  Redistribution of source or object files or
 * any derivative works is prohibited. By agreement, this
 * notice may not be removed.
 *
 * Authors: Charles Levine, Philip Durr
 *                                      Microsoft Corp.
 *
 */

//FILE: RTETIME.H

#define       MAX_JULIAN_TIME                         0x7FFFFFFFFFFFFFFF
#define JULIAN_TIME             __int64
#define       TC_TIME                 DWORD
extern "C"
{
BOOL                            InitJulianTime(LPSYSTEMTIME  lpInitTime);
JULIAN_TIME   GetJulianTime(void);
DWORD                           MyTickCount(void);
void                            GetJulianAndTC(JULIAN_TIME *pJulian, DWORD *pTC);
JULIAN_TIME   ConvertTo64BitTime(int iYear, int iMonth, int iDay, int iHour, int
iMinute, int iSecond);
JULIAN_TIME   Get64BitTime( LPSYSTEMTIME lpInitTime);
int                                     JulianDay( int yr, int mm, int dd );
void                            JulianToTime(JULIAN_TIME julianTS, int* yr, int* mm,
int* dd, int *hh, int *mi, int *ss );
void                            JulianToCalendar( int day, int* yr, int* mm, int*
dd );
}
```

common/txnlog/include/spinlock.h

```
/*              FILE: SPINLOCK.H
 *
 * Copyright 1997 Microsoft Corp., All rights reserved.
 *
 * Source code licensed to Tandem Computers  for Internal
 * use only.  Redistribution of source or object files or
 * any derivative works is prohibited. By agreemen  t, this
 * notice may not be removed.
 *
 * Authors: Mike Parkes, Charles Levine, Philip Durr
 *                                      Microsoft Corp.
 */

#ifndef _INC_Spinlock

        const LONG LockClosed       = 1;
        const LONG LockOpen                     = 0;

        /************************************************************  ********
         *
         *   Spinlock and Semaphore locking.
         *
         *   This class provides a very conservative loc  king scheme.
         *   The assumption behind the code is that locks will be
         *   held for a very short time.  When a lock is taken a memory
         *   location is exchanged.  All other threads that want this
         *   lock wait by spinning and sometimes  sleeping on a semaphore
         *   until it becomes free again.  The only other choice is not
         *   to wait at all and move on to do something else.  This
         *   module should normally be used in conjunction with cache
         *   aligned memory in minimize  cache line misses.
         *
         ************************************************************/

        class Spinlock
        {               // Private data.
                        HANDLE                  Semaphore;
                        volatile LONG           m_Spinlock;
                        volatile LONG           Waiting;

                        #ifdef _DEBUG
                                // Counters for debugging builds.
                                volatile LONG TotalLocks;
                                volatile LONG TotalSleeps;
                                volatile LONG TotalSpins;
                                volatile LONG TotalWaits;
                        #endif

                        public:
                                // Public functions.

                                Spinlock( void );

                                inline BOOL ClaimLock( BOOL Wait =
TRUE );
                                inline void ReleaseLock( void );
                                ~Spinlock( void );
                                // Disabled operations.
                                Spinlock( const Spinlock & Copy );
                                void operator=( const Spi nlock & Copy );

                        private:
                                // Private functions.
                                inline BOOL ClaimSpinlock( volatile LONG
*sl );
                                void WaitForLock( void );
                                void WakeAllSleepers( void );
        };

        /************************************************************
         *
         *   A guaranteed atomic exchange.
         *
         *   An attempt is made to claim the Spinlock.  This action is
         *   guaranteed  to be atomic.
         *
         ************************************************************/

        inline BOOL Spinlock::ClaimSpinlock( volatile LONG *Spinlock )
        {               #ifdef _DEBUG
                                InterlockedIncrement( (LPLONG) &
TotalLocks );
                        #endif
                        return ( ((*Spinlock) == LockOpen) &&
(InterlockedExchange( (LPLONG)Spinlock, LockClosed ) == LockOpen) );
        }

        /*************************************************
         *
         *   Claim the Spinlock.
         *
         *   Claim the lock if available else wait or exit.
         *
         ********** ****************************************/

        inline BOOL Spinlock::ClaimLock( BOOL Wait )
        {               if ( ! ClaimSpinlock( (volatile LONG*) &
m_Spinlock ) )
                        {
                                if ( Wait )
                                        WaitForLock();
                                return Wait;
                        }
                        return TRUE;
        }

        /************************** ****************************
         *
         *   Release the Spinlock.
         *
         *   Release the lock and if needed wakeup any s  leepers.
         *
         ******************************************************/

        inline void Spinlock::ReleaseLock( void )
        {
                        m_Spinlock = LockOpen;
                        if ( Waiting > 0 )
                                WakeAllSleepers();
        }

        #define _INC_Spinlock

#endif
```

common/txnlog/include/txnlog.h

```
/*              FILE:                   TXNLOG.H
 *                                      Microsoft TPC -C Kit Ver.
```

```
4.10.000
 *                                                      not yet audited
 *
 *             PURPOSE:       Header file for txn log class
 *                                                      Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 */

#pragma once

    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                            1
                //
                #define TXN_REC_TYPE_TPCC                               2
                // replaces TRANSACTION_TYPE_TPCC
                #define TXN_REC_TYPE_TPCC_DEL IV_DEF       3

                typedef struct _TXN_RECORD_HEADER
                {
                        JULIAN_TIME   TxnStartTO;                   // start of
txn
                        BYTE          TxnType;
                // one of TXN_REC_TYPE_*
                        BYTE          TxnSubType;
                // depends on TxnType
                } TXN_RECORD_HEADER, *PTXN_RECORD_HEADER;


                typedef struct _TXN_RECORD_CONTR OL
                {
                        // common header; must exactly match TXN_RECORD_HEADER
                        JULIAN_TIME   TxnStartTO;                   // start of
txn
                        BYTE          TxnType;
                // = TXN_REC_TYPE_CONTROL
                        BYTE          TxnSubType;
                // depends on TxnType
                        // end of common header

                        DWORD         Len;
                // number of bytes a fter this field
                } TXN_RECORD_CONTROL, *PTXN_RECORD_CONTROL;


                // TPC-C Txn Record Layout:
                //
    //'TxnStartTO' is a Julian timestamp corresponding to the moment the
    //txn is sent to the SUT, i.e., beginning of response time.  Deltas
    //are in mi lliseconds.  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 TxnStartTO + RTDelay.
    //
    //Graphically:
    //
    //  time -->
    //
    //    |--- Menu  ---|-- Keying  --|-- Response --|--- Think  --|
    //     <- DeltaT1 -> <- DeltaT2 -> <- DeltaT4  -> <- DeltaT3 ->
    //                                ^
    //                                ^ TxnStar  tTO
    //
    //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   TxnStartTO;                   // start of
txn
                        BYTE          TxnType;
                // = TXN_REC_TYPE_TPCC
                        BYTE          TxnSubType;
                // depends on TxnType
                        // end of common header
                        int     DeltaT1;                        // menu time
(ms)
                        int     DeltaT2;                        // keying
time (ms)
                        int     DeltaT3;                        // think time
(ms)
                        int     DeltaT4;                        // response
time (ms)
                        int     RTDelay;                        // response
time delay (ms)
                        int                             TxnError;
                // error code providing more detail for TxnStatus
                        int                             w_id;
                // warehouse ID
                        BYTE            d_id;
                // assigned district ID for this thread
                        BYTE            d_id_ThisTxn; // district ID  chosen for
this particular
                        BYTE            TxnStatus;              // completion
status for txn to indicate errors
                        BYTE            reserved;               // for word
alignment
                        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_D  ELIV_DEF
                {
                        // common header; must exactly match TXN_RECORD_HEADER
                        JULIAN_TIME   TxnStartTO;                   // start of
txn
                        BYTE          TxnType;
                // = TXN_REC_TYPE_TPCC_DELIV_DEF
                        BYTE          TxnSubType;
                // = 0
                        // end of common header

                        int     DeltaT4;                        // response
time (ms)
                        int                             DeltaTxnExec; // execution
time (ms)
                        int                             w_id;
                // warehouse ID
                        BYTE            TxnStatus;              // completion
status for txn to indicate errors
                        BYTE            reserved;               // for word
alignment
                        short   o_carrier_id;       // carrier id
                        long            o_id[10];               // returned
delivery transaction ids
                } TXN_RECORD_TPCC_DELIV_DEF, *PTXN_RECORD_TPCC_DELIV_DEF;



#define                 TXN_LOG_VERSION                         2
#define                 TXN_DATA_START                          4096
                // offset in log file where log records start
#define                 TXN_LOG_EYE_CATCHER             "BC"            // signature
bytes at the start o f log file


                ////////////////////////////////////////////////////////////////////
////////
                // The transaction log has a header as the first 4K block.
                //
                typedef struct _TXN_LOG_HEADER
                {
                        char
                EyeCatcher[2];              // signature bytes; should always be
"BC"
                        int
                LogVersion;                 // set to TXN_LOG_VERSION
                        JULIAN_TIME                     BeginTxnTS;
                // timestamp of first (lowest) txn start
                        JULIAN_TIME                     EndTxnTS;
                // timestamp of last (highest) txn completion time
                        int
                iRecCount;                  // number of records in log file
                        BOOL                                    bLogSorted;
                        int
                iFileSize;                  // file size in bytes

                        // the record map provides a fast way to get close to
a particular timestamp in a sorted log file.
                //      struct
                //      {
                //                              JULIAN_TIME             TS;
                        // timestamp of record
                //                              int
                iPos;                           // byte position in file
                //      }
                RecMap[RecMapSize];
                //#define                       RecMapSize                              200

                } TXN_LOG_HEADER, *PTXN_LOG_HEADER;

                /* Header of the sorted pointers blocks in Temp file (in merging).
*/
                typedef struct BLOCK_HEADER {
                        long            BlockPos;
                        __int64 CurPos;
                        DWORD           BytesRead;
                        int             nRecords;
                        BYTE            *offset;        /* offset of pointers to
records in the log file */
                } BLOCK_HEADER, *PBLOCK_HEADER;


#define         READ_BUFFER_SIZE                        64*1024
#define         WRITE_BUFFER_SIZE                        8*1024

#define         NUM_READ_BUFFERS                        1
#define         NUM_WRITE_BUFFER S                      2
#define         MAX_NUM_BUFFERS                                 2

// flags passed in to the constructor
#define         TXN_LOG_WRITE           0x01
#define         TXN_LOG_READ            0x02
#define         TXN_LOG_SORTED                          0x04
#define TXN_LOG_CRASHOPEN    0x08                       // if set, invalid headers
will be tolerated; used for recovery

#define         TXN_LOG_OS_ERROR        1
#define         TXN_LOG_NOT_SORTED      2

#define SKIP_CTRL_RECS                  1

class CTxnLog
{
                private:
                        DWORD                           iBufferSize;
                //buffer allocated size
                        DWORD                           iBytesFreeInBuffer;
                //total bytes available for use in buffer
                        int                                             iNumBuffers;
                        //buffers in use
                        int
                iActiveBuffer;                                          //indicates
which buffer is active: 0 or 1
                        int                                             iIoBuffer;
                                        //buffer for any pending IO operation
//                      int                             iFilePointer;
                        //position in file.
                        LARGE_INTEGER lFilePointer;             //position in
file.
                        int                                             iNextRec;
                                        //when reading, ordinal value of next
record
                        // A "save point" is remembered each time
GetNextRecord is called with a start time specified.
                        // The next time it is called, if start time is after
the save point, we start scanning from the
                        // save point.  This is particularly useful in
FindBestInterval, where the log is scanned repeatedly.
                        JULIAN_TIME                     SavePtTime;
//                      int
                iSavePtFilePointer;
                        LARGE_INTEGER lSavePtFilePointer;
                        int
                iSavePtNextRec;

                        JULIAN_TIME     lastTS;
                        //when writing sort ed output, used to verify records
are sorted
                        BOOL                            bWrite;
                                        //writing log file
                        BOOL                            bCrashOpen;
                        // tolerate bad headers and consistency checks

                        BOOL                                            bLogSorted;
                        // is log file sorted?  applies to both input and
output
                        JULIAN_TIME                     BeginTxnTS;
                // timestamp of first (lowest) txn start
                        JULIAN_TIME                     EndTxnTS;
                // timestamp of last (highest) txn completion time
                        int
                iRecCount;                                      // number of records in log
file
                        BYTE                            *pCurrent;
                        //ptr to current buffer
                        BYTE                            *pBuffer[MAX_NUM_BU FFERS];

                        PTXN_RECORD_HEADER              *TxnArray;
                //transaction record pointer array for sort

                        DWORD                           dwError;
                        HANDLE                          hTxnFile;
                        //handle to log file
                        HANDLE                          hMapFile;
                        //map file used when sorting the log
                //      HANDLE                                  hIoComplete;
                //event to signify tha t there are no pending IOs
                        HANDLE                          hLogFileIo;
                        //event to signal the IO thread to write the inactive
buffer

                        Spinlock        Spin;
                        //spin lock to protect the txn log file buffers

                        FILE
                *tmpFile;                       //temp file for merging sorted pieces
                        PBLOCK_HEAD ER                  tmpHeaders;
                //sorted pointers block header
                        BYTE
                **recPointers;                  //record pointer buffers for each sorted
block
                        PTXN_RECORD_HEADER              *recBuffers;  //record
buffers for each sorted block
                        int                             *PointersRead;
                                        //# of pointers processed in each bloc k
```

```
                        BOOL            *BlockAvailable;
        //whether to check a particular block for jmin

                        int                             nBlocks;
                        int                             jmin;
                                                        //index (block-wise) of the
lowest timestamp record
                        int                             iAvgRecordLen;
                                        //average record length

                        int                             iSortedReturnedCount;
        //keeps track of the # of sorted records returned through
GetSortedRecord()


                        int Write(BYTE *ptr, DWORD Size);
                        static void LogFileIO(CTxnLog *);

                        void LoadBuffers(int j);
        //used in sort/merge to load record buffers

        public:

                        CTxnLog::CTxnLog(LPCTSTR szFi leName, DWORD dwOpts);
                        ~CTxnLog(void);

                        int WriteToLog(PTXN_RECORD_TPCC pTxnRcrd);
                        int WriteToLog(PTXN_RECORD_TPCC_DELIV_DEF pTxnRcrd);
                        int WriteToLog(PTXN_RECORD_CONTROL pCtrlRec);
                        int WriteToLog(PTXN_RECORD_HEADER pCtrlRec);

                        int WriteCtrlR ecToLog(BYTE SubType, LPTSTR lpStr,
DWORD dwLen);

                        void CloseTransactionLogFile(void);

                        PTXN_RECORD_HEADER GetNextRecord(BOOL bSkipCtrlRecs =
FALSE);
                        PTXN_RECORD_HEADER GetNextRecord(JULIAN_TIME
SeekTimeTO, BOOL bSkipCtrlRecs = FALSE);

                        int Sort(vo id);
                        PTXN_RECORD_HEADER GetSortedRecord();

                        inline BOOL IsSorted(void) { return bLogSorted; };
                        inline JULIAN_TIME BeginTS(void) { return
BeginTxnTS; };
                        inline JULIAN_TIME EndTS(void) { return EndTxnTS; };
                        inline int RecordCount(void) { return iRe  cCount; };
};

class CTXNLOG_ERR : public CBaseErr
{
        public:
                        enum CTXNLOG_ERRS
                        {
                                ERR_BAD_FILE_FORMAT,
        // "File format is invalid."
                                ERR_UNKNOWN_LOG_VERSION,    // "Log file
version is unknown."
                                ERR_BROKEN_LOG_FILE,
        // "Log file is broken."
                                ERR_LOG_NOT_SORTED,
        // "Log file is not sorted"
                                ERR_INVALID_TIME_SEQ,
        // "Internal Error: Record Time Sequence invalid."
                        };

                        CTXNLOG_ERR(int iErr) : CBaseErr(iErr) {};

                        int ErrorType() {return ERR_TYPE_TXNLOG;};

                        char *ErrorText()
                        {
                                static char *szMsgs[] = {
                                        "File format is invalid.",
                                        "Log file version is
unknown.",

                                        "Log file is broken.",
                                        "Log file is not sorted",
                                        "Internal Error: Record
Time Sequence invalid.",

                                        ""
                                };

                                for(int i = 0; szMsgs[i][0]; i++)
                                {
                                        if ( m_idMsg == i )
                                                break;
                                }

                                return(szMsgs[i][0] ? szMsgs[i] :
ERR_UNKNOWN);
                        };
};
```

db_dblib_dll/db_dblib_dll.dsp

```
# Microsoft Developer Studio Project File   - Name="db_dblib_dll"  - Package
Owner=<4>
# Microsoft Developer Studio Generated  Build File, Format Version 6.00
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Dynamic -Link Library" 0x0102

CFG=db_dblib_dll  - Win32 IceCAP

!MESSAGE This is not a valid makefile. To build this project using NMAKE,
!MESSAGE use the Export Makefile command a  nd run
!MESSAGE
!MESSAGE NMAKE /f "db_dblib_dll.mak".
!MESSAGE
!MESSAGE You can specify a configuration when running NMAKE
!MESSAGE by defining the macro CFG on the command line. For example:
!MESSAGE
!MESSAGE NMAKE /f "db_dblib_dll.mak" CFG="db_dblib_d  ll - Win32 IceCAP"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "db_dblib_dll  - Win32 Release" (based on "Win32 (x86) Dynamic  -Link
Library")
!MESSAGE "db_dblib_dll  - Win32 Debug" (based on "Win32 (x86) Dynamic  -Link
Library")
!MESSAGE "db_dblib_dll  - Win32 IceCAP" (based on "Win32 (x86) Dynamic  -Link
Library")
!MESSAGE

# Begin Project
# PROP AllowPerConfigDependencies 0
# PROP Scc_ProjName ""
# PROP Scc_LocalPath ""
CPP=cl.exe
MTL=midl.exe
RSC=rc.exe

!IF  "$(CFG)" == "db_db lib_dll - Win32 Release"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX
/FD /c
# ADD CPP /nologo /MD /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /FD /c
# ADD BASE MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
# ADD LINK32 ntwdblib.lib kernel32.lib user32.l  ib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

/nologo /subsystem:windows /dll /machine:I386 /out:".  \bin/tpcc_dblib.dll"

!ELSEIF  "$(CFG)" == "db_dblib_dll  - Win32 Debug"

# 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
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD CPP /nologo /MDd /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS"
/YX /FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL  " /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/pdbtype:sept
# ADD LINK32 ntwdblib.lib kernel32.lib user32.lib gdi32.lib winspool.l   ib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

/nologo /subsystem:windows /dll /debug /machine:I386 /out:".  \bin/tpcc_dblib.dll"
/pdbtype:sept

!ELSEIF  "$(CFG)" == "db_dblib_dll  - Win32 IceCAP"

# PROP BASE Use_MFC 0
# PROP BASE  Use_Debug_Libraries 1
# PROP BASE Output_Dir "db_dblib"
# PROP BASE Intermediate_Dir "db_dblib"
# PROP BASE Ignore_Export_Lib 0
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MDd /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D
"_WINDOWS" /YX /FD /Gh /c
# ADD CPP /nologo /MD /W3 /Gm /GX /Zi /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /D
"ICECAP" /YX /FD /Gh /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 ntwdblib.lib kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib

uuid.lib /nologo /subsystem:windows /dll /debug /machine:I386
/out:".\bin/tpcc_dblib.dll" /pdbtype:se  pt
# ADD LINK32 icap.lib ntwdblib.lib kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib

uuid.lib /nologo /subsystem:windows /dll /debug /machine:I386
/out:".\bin/tpcc_dblib.dll" /pdbtype:sept

!ENDIF

# Begin Target

# Name "db_dblib_dll  - Win32 Release"
# Name "db_dblib_dll  - Win32 Debug"
# Name "db_dblib_dll  - Win32 IceCAP"
# Begin Group "Source"

# PROP Default_Filter "*.cpp"
# Begin Source File

SOURCE=. \src\tpcc_dblib.cpp
# End Source File
# End Group
# Begin Group "Header"

# PROP Default_Filter "*.h"
# Begin Source File

SOURCE=. .\common\src\error.h
# End Source File
# Begin Source File

SOURCE=. \src\tpcc_dblib.h
# End Source File
# Begin Source File

SOURCE=. .\common\src\trans.h
# End Source File
# Begin Source File

SOURCE=. .\common\src\txn_base.h
# End Source File
# End Group
# End Target
# End Project
```

db_dblib_dll/src/tpcc_dblib.cpp

```
/*              FILE:                                   TPCC_DBLIB.CPP
 *                                                                      Microsoft TPC-C Kit Ver.
4.20.000
 *                                                                      Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                                                      Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
 *
 *              PURPOSE:        Implements dblib calls for TPC -C txns.
 *              Contact:        Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                              4.20.000  - updated rev number to match kit
 *                              4.10.001  - not deleting error class in catch handler
on deadlock retry;
 *                                                                      not a functional bug,
but a memory leak
 *                                                                    - had to tweak some
declarations to compile with latest SDK; no functional change
 */

#include <windows.h>
#include <stdio.h>
#include <assert.h>

#define DBNTWIN32
#include <sqlfront.h>
#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"
```

```
#define       DEFCLPACKSIZE                              4096

// version string; must match return value from tpcc_version stored proc
const char    sVersion[] = "4.10.000";

const                               iMaxRetries = 10;
              // how many retries on deadlock
static        long          iConnectionCount = 0;  // number of current dblib
connections

const int iErrOleDbProvider = 7312;
const char sErrTimeoutExpired[] = "Timeout expired";

BOOL APIENTRY DllMain(HMODULE  hModule, DWORD ul_reason_for_call, LPVOID
lpReserved)
{
              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 *msgtex t)
 *
 * PURPOSE:   This function handles DB -Library SQL Server error messages
 *
 * ARGUMENTS: DBPROCESS                  *dbproc
              DBPROCESS id pointer
 *                                                DBINT
              msgno                                         message number
 *                                                int
                            msgstate                        message state
 *                                                int
                            severity                        message severity
 *                                                char
              *msgtext                          printable message description
 *
 * RETURNS:                 int
              INT_CONTINUE  continue if error is SQLETIME else INT_CANCEL action
 *
                            INT_CANCEL                      cancel operation
 *
 * COMMENTS:  This function also sets the dead lock dbproc variable if necessar   y.
 *
 */

// 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, DBUSM ALLINT 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, c  har * 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 p ointer
 *                                                int
                            n                               number of characters to
copy
 *
 * 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)
{
    strncpy(pDest, (char *)pSrc, n);
    pDest[n] = ' \0';

              return;
}

/* FUNCTION: CTPCC_DBLIB_ERR::ErrorText
 *
 */

char* CTPCC_DBLIB_ERR::ErrorText(void)
{
              int i;

              static SERRORMSG errorMsgs[] =
              {
                            { ERR_WRONG_SP_VERSION,                     "Wrong
version of s tored procs on database server"          },
                            { ERR_INVALID_CUST,
              "Invalid Customer id,name."                   },
                            { ERR_NO_SUCH_ORDER,                        "No orders
found for customer."
              },
                            { ERR_RETRIED_TRANS,                        "Retries
before transaction succeeded."
              },
                            { 0,
                            ""


                                                }
              };

              static char szNotFound[] = "Unknown error number.";

              for(i=0; errorMsgs[i].szMsg[0]; i++)
              {
                            if ( m_errno == errorMsgs[i].iError )
                                          break;
              }
              if ( !errorMsgs[i].szMsg[0] )
                            return szNotFound;
              else
                            return errorMsgs[i].szMsg;
}

// wrapper routine for class constructor
__declspec(dllexport) CTPCC_DBLIB* CTPCC_DBLIB_new(
              LPCSTR szServer,                              // name of SQL server
              LPCSTR szUser,                                          // user name
for login
              LPCSTR szPassword,                            // password for login
              LPCSTR szHost,                                          //
workstation name; shows  up in sp_who; max 30 chars, only first 10 kept by SQL
Server
              LPCSTR szDatabase )                           // name of database to use
{
              return new CTPCC_DBLIB( szServer, szUser, szPassword, szHost,
szDatabase );
}


CTPCC_DBLIB::CTPCC_DBLIB (
              LPCSTR szServer,                              // name of SQL se rver
              LPCSTR szUser,                                          // user name
for login
              LPCSTR szPassword,                            // password for login
              LPCSTR szHost,                                          //
workstation name; shows up in sp_who; max 30 chars, only first 10 kept by SQL
Server
              LPCSTR szDatabase )                           // name of database to use
{
              LOGINREC      *login;
              const BYTE    *pData;

              // initialization
              m_dbproc = NULL;
              m_DbLibErr = (CDBLIBERR*)NULL;
              m_SqlErr = (CSQLERR*)NULL;

              m_MaxRetries = 10;                            // how many retries on
deadlock

              // increase max number of connections if getting close
              if ( dbgetmaxprocs () < (iConnectionCount+5) )
              {
                            if ( dbsetmaxprocs(iConnectionCount+10) == FAIL )
                                          ThrowError(CDBLIBERR::eDbSetMaxProcs);
              }

              // allocate a login structure
              login = dblogin();
              if (login == NULL)
                            ThrowError(CDBLIBERR::eLogin);
              InterlockedIncrement(  &iConnectionCount );

              // register error and message handler functions
              if (dbprocerrhandle(login, err_handler) == NULL)
                            ThrowError(CDBLIBERR::eDbProcHandler);

              if (dbprocmsghandle(login, msg_handler) == NULL)
                            ThrowError(CDBLIBERR::eDbProcHandler);


              DBSETLUSER(login, szUser);
              DBSETLPWD(login, szPassword);
              DBSETLHOST(login, szHost);
              DBSETLPACKET(login, (unsigned short)DEFCLPACKSIZE);
              DBSETLVERSION(login, DBVER60);                                  // use dblib
ver 6.0 client behavior

              // set time to wait for login
              if (dbsetlog intime(60) == FAIL)
                            ThrowError(CDBLIBERR::eDbSet);

              // set time to wait for statement execution
              if (dbsettime(180) == FAIL)
                            ThrowError(CDBLIBERR::eDbSet);

              m_dbproc = dbopen(login, szServer);

              // deallocate login structure before checking for succe   ss
              dbfreelogin( login );

              if (m_dbproc == NULL)
                            ThrowError(CDBLIBERR::eDbOpen);

              // save address of class instance so that the message and error
handler
              // can get to data.
              dbsetuserdata(m_dbproc, (LPVOID)this);

              // Use the the right database
              if (dbuse(m_dbproc, szDatabase) == FAIL)
                            ThrowError(CDBLIBERR::eDbUse);

              dbcmd(m_dbproc, "set nocount on ");
              // do not return row counts
              dbcmd(m_dbproc, "set XACT_ABORT ON");                           // rollback
transaction on abort

              if (dbsqlexec(m_dbproc) == FAIL)
                            ThrowError(CDBLIBERR::eDbSqlExec);

              DiscardNextResults(2);

              // verify that version of stored procs on server is correct
              dbrpcinit(m_dbproc, "tpcc_version", 0);

              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);

              char szSrvVersion[16];
              pData=dbdata(m_dbproc, 1);
              if (pData)
                            UtilStrCpy(szSrvVersion, pData, dbdatlen(m_dbproc,
1));
              else
                            szSrvVersion[0]=0;
              if (strcmp(szSrvVersion,sVersion))
                            throw new
CTPCC_DBLIB_ERR( CTPCC_DBLIB_ERR::ERR_WRONG_SP_VERSION );


              DiscardNextRows(0);
              DiscardNextResults(0);
}


CTPCC_DBLIB::~CTPCC_DBLIB( void )
{
              // close db connection and deallocate resour  ces
              dbclose(m_dbproc);
              InterlockedDecrement( &iConnectionCount );
              if (m_DbLibErr != NULL)
                            delete m_DbLibErr;
              if (m_SqlErr != NULL)
                            delete m_SqlErr;
}

void CTPCC_DBLIB::SetDbLibError(int severity, int dberr, int oserr, LPCSTR
dberrstr, LPCSTR oserr str)
{
              delete m_DbLibErr;
              m_DbLibErr = new CDBLIBERR(CDBLIBERR::eUnknown, severity, dberr,
oserr);

              if (dberrstr != NULL)
              {
                            m_DbLibErr ->m_dberrstr = new
char[ strlen(dberrstr)+1 ];
                            strcpy( m_DbLibErr ->m_dberrstr, dberrstr );
              }

              if (oserrstr != NU LL)
              {
                            m_DbLibErr ->m_oserrstr = new
char[ strlen(oserrstr)+1 ];
                            strcpy( m_DbLibErr ->m_oserrstr, oserrstr );
              }
```

```
}

void CTPCC_DBLIB::SetSqlError( int /*DBINT*/ msgno, int msgstate, int severity,
LPCSTR msgtext )
{
        if (m_SqlErr == NULL)
                m_SqlErr = new CSQLERR();

        m_SqlErr->m_msgno = msgno;
        m_SqlErr->m_msgstate = msgstate;
        m_SqlErr->m_severity = severity;

        delete [] m_SqlErr->m_msgtext;
        if (msgtext != NULL)
        {
                m_SqlErr->m_msgtext = new char[ strlen(msgtext)+1 ];
                strcpy( m_SqlErr->m_msgtext, msgtext );
        }
}

void CTPCC_DBLIB::ThrowError( CDBLIBERR::ACTION eAction )
{
        // discard anything still in return buffer
        DiscardNextRows( -1);
        DiscardNextResults( -1);

        // check for SQL Server error first;  if yes, throw it and ignore
any DBLib error.
        if (m_SqlErr != NULL)
        {
                CSQLERR                 *pSqlErr;
                pSqlErr = m_SqlErr;
                m_SqlErr = NULL;        // clear our pointer to
instance; catch handler will delete
                throw pSqlErr;
        }

        CDBLIBERR       *pDbLibErr;
        if (m_DbLibErr == NULL)
                // this case isn't expected to happen, since it means
that an error was returned
                // but the error handlers were not called.
                pDbLibErr = new CDBLIBERR(eAction);
        else
        {
                pDbLibErr = m_DbLibErr;
                pDbLibErr->m_eAction = eAction;
                m_DbLibErr = NULL;                      // clear our
pointer to instance; catch handler will delete
        }

        throw pDbLibErr;
}

// Read and discard rows until no more.  Throw an exception if number of rows
read doesn't
// match number of rows expected.  The row 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
// rows to be read.
void CTPCC_DBLIB::DiscardNextRows(int iExpectedCount)
{
        int                     iRowsRead = 0;
        RETCODE         rc;

        while (TRUE)
        {
                rc = dbnextrow(m_dbproc);
                if (rc == NO_MORE_ROWS)
                        break;
                if (rc == FAIL)
                {
                        if (iExpectedCount >= 0)

        ThrowError(CDBLIBERR::eDbNextRow);
                        else
                                break;
                }
                iRowsRead++;
        }

        if ((iExpectedCount >= 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 the   re
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);
                        else
                                break;
                }

                DiscardNextRows( -1);
                iResultsRead++;
        }

        if ((iExpectedCount >= 0) &&
                (iExpectedCount != iResultsRead))
                ThrowError(CDBLIBERR::eWrongRowCount);
}

void CTPCC_DBLIB::Sto ckLevel()
{
        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;

        int                                     iTryCount = 0;
        const BYTE      *pData;

        ResetError();

        while (TRUE)
        {
                try
                {
                                        dbrpcinit(m_dbproc, "tpcc_neworder", 0);

                                        dbrpcparam(m_dbproc, NULL, 0, SQLINT2,   -
1, -1, (BYTE *) &m_txn.NewOrder.w_id);
                                        dbrpcparam(m_dbproc, NULL, 0, SQLINT1,   -
1, -1, (BYTE *) &m_txn.NewOrder.d_id);
                                        dbrpcparam(m_dbproc, NULL, 0, SQLINT4,   -
1, -1, (BYTE *) &m_txn.NewOrder.c_id);
                                        dbrpcparam(m_dbproc, NULL, 0, SQLINT1,   -
1, -1, (BYTE *) &m_txn.NewOrder.o_ol_cnt);

                                        // check whether any order lines are for
a remote warehouse
                                        m_txn.NewOrder.o_all_local = 1;
                                        for (i = 0; i < 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;
                                                }
                                        }
                                        dbrpcparam(m_dbproc, NULL, 0, SQLINT1,   -
1, -1, (BYTE *) &m_txn.NewOrder.o_all_local);

                                        for (i = 0; i < m_txn.NewOrder.o_ol_cnt;
i++)
                                        {
                                                dbrpcparam(m_dbproc, NULL,
0, SQLINT4,  -1, -1, (BYTE *) &m_txn.NewOrder.OL[i].ol_i_id);
                                                dbrpcparam(m_dbproc, NULL,
0, SQLINT2,  -1, -1, (BYTE *) &m_txn.NewOrder.OL[i].ol_supply_w_id);
                                                dbrpcparam(m_dbproc, NULL,
0, SQLINT2,  -1, -1, (BYTE *) &m_txn.NewOrder.OL[i].ol_quantity);
                                        }

                                        if (dbrpcexec(m_dbproc) == FAIL)

        ThrowError(CDBLIBERR: :eDbRpcExec);


                                        // Get order line results
                                        m_txn.NewOrder.total_amount = 0;
                                        for (i = 0; i<m_txn.NewOrder.o_ol_cnt;
i++)
                                        {
                                                if (dbresults(m_dbproc) !=
SUCCEED)

        ThrowError(CDBLIBERR::eDbResults);

                                                if (dbnumcols(m_dbproc) !=
5)

        ThrowError(CDBLIBERR::eWrongNumCols);

                                                if (dbnextrow(m_dbproc) !=
REG_ROW)

        ThrowError(CDBLIBERR::eDbNextRow);

                                                if(pData=dbdata(m_dbproc,
1))

        UtilStrCpy(m_txn.NewOrder.OL[i].ol_i_name, pD  ata, dbdatlen(m_dbproc,
1));
                                                if(pData=dbdata(m_dbproc,
2))

        m_txn.NewOrder.OL[i].ol_stock = (*(DBSMALLINT *) pData);
                                                if(pData=dbdata(m_dbproc,
3))

        UtilStrCpy(m_txn.NewOrder.OL[i].ol_brand_generic, pData,
dbdatlen(m_dbproc, 3));
                                                if(pData=dbdata(m_dbproc,
4))

        dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,4),
                                                        SQLFLT8,
(BYTE *)&m_txn.NewOrder.OL[i].ol_i_price, 8);
                                                if(pData=dbdata(m_dbproc,
5))

        dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData, d  bdatlen(m_dbproc,5),
                                                        SQLFLT8,
(BYTE *)&m_txn.NewOrder.OL[i].ol_amount, 8);

                                                m_txn.NewOrder.total_amount
= m_txn.NewOrder.total_amount + m_txn.NewOrder.OL[i].ol_amount;

                                                DiscardNextRows(0);
                                        }


                                       // get remaining values for w_tax, d_ta  x,
o_id, c_last, c_discount, c_credit, o_entry_d, commit_flag
                                        if (dbresults(m_dbproc) != SUCCEED)

        ThrowError(CDBLIBERR::eDbResults);

                                        if (dbnextrow(m_dbproc) != REG_ROW)

        ThrowError(CDBLIBERR::eDbNextRow);

                                        if (dbnumcols(m_dbproc) != 8)

        ThrowError(CDBLIBERR::eWrongNumCols);

                                        if (pData=dbdata(m_dbproc, 1))



                                                dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,1), SQLFLT8, (BYTE
*)&m_txn.NewOrder.w_tax,
```

```
8);
                                        if (pData=dbdata(m_dbproc, 2))

                                                dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,2), SQLFLT8, (BYTE
*)&m_txn.NewOrder.d_tax,

8);
                                        if (pData=dbdata(m_dbproc, 3))
                                                m_txn.NewOrder.o_id =
(*(DBINT *) pData);
                                        if (pData=dbdata(m_dbproc, 4))

            UtilStrCpy(m_txn.New Order.c_last, pData, dbdatlen(m_dbproc, 4));
                                        if (pData=dbdata(m_dbproc, 5))
                                                dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,5), SQLFLT8, (BYTE

*)&m_txn.NewOrder.c_discount, 8);
                                        if (pData=dbdata(m_dbproc, 6))

            UtilStrCpy(m_t xn.NewOrder.c_credit, pData, dbdatlen(m_dbproc, 6));
                                        if (pData=dbdata(m_dbproc, 7))
                                        {
                                                datetime = *((DBDATETIME *)
pData);
                                                dbdatecrack(m_dbproc,
&daterec, &datetime);

            m_txn.NewOrder.o_entry_d.year   = daterec.year;

            m_txn.NewOrder.o_ent ry_d.month  = daterec.month;

            m_txn.NewOrder.o_entry_d.day    = daterec.day;

            m_txn.NewOrder.o_entry_d.hour   = daterec.hour;

            m_txn.NewOrder.o_entry_d.minute = daterec.minute;

            m_txn.NewOrder.o_entry_d.second = daterec.second;
                                        }
                                        if (pDat a=dbdata(m_dbproc, 8))
                                                commit_flag = (*(DBTINYINT
*) pData);

                                        DiscardNextRows(0);
                                        DiscardNextResults(0);


                                        if (commit_flag == 1)
                                        {
                                                m_txn.NewOrder.total_amount
*= ((1 + m_txn.NewOrder.w_tax + m_txn.NewOrder.d_tax) * (1    -
m_txn.NewOrder .c_discount));

            m_txn.NewOrder.exec_status_code = eOK;
                                        }
                                        else

            m_txn.NewOrder.exec_status_code = eInvalidItem;

                                        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::Payment()
{
            DBDATETIME      datetime;
            DBDATEREC       daterec;

            int                                 iTryCount = 0;
            const BYTE      *pData;

            ResetError();

            while (TRUE)
            {
                        try
                        {
                                        dbrpcinit(m_dbproc,  "tpcc_payment", 0);

                                        dbrpcparam(m_dbproc, NULL, 0, SQLINT2,   -
1, -1, (BYTE *) &m_txn.Payment.w_id);
                                        dbrpcparam(m_dbproc, NULL, 0, SQLINT2,   -
1, -1, (BYTE *) &m_txn.Payment.c_w_id);
                                        dbrpcparam(m_dbproc, NULL, 0, SQLFLT8,   -
1, -1, (BYTE *) &m_txn.Payme nt.h_amount);
                                        dbrpcparam(m_dbproc, NULL, 0, SQLINT1,   -
1, -1, (BYTE *) &m_txn.Payment.d_id);
                                        dbrpcparam(m_dbproc, NULL, 0, SQLINT1,   -
1, -1, (BYTE *) &m_txn.Payment.c_d_id);
                                        dbrpcpa ram(m_dbproc, NULL, 0, SQLINT4   -
1, -1, (BYTE *) &m_txn.Payment.c_id);

                                        // if customer id is zero, then payment
is by name
                                        if (m_txn.Payment.c_id == 0)
                                                dbrpcparam(m_dbproc, NULL,
0, SQLCHAR,  -1, strlen(m_txn.Payment.c_last), (unsigned char
*)m_txn.Payment.c_last);

                                        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 (dbnumcols(m_dbproc) != 27)

                        ThrowError(CDBLIBERR::eWrongNumCols);

                                        if (pData=dbdata(m_dbproc, 1))
                                                m_txn.Payment.c_id =
*((DBINT *) pData);
                                        if (pData=dbdata(m_dbproc, 2))

                        UtilStrCpy(m_txn.Payment.c_last, pData, dbdatlen(m_dbproc, 2)   );
                                        if (pData=dbdata(m_dbproc, 3))
                                        {
                                                datetime = *((DBDATETIME *)
pData);
                                                dbdatecrack(m_dbproc,
&daterec, &datetime);
                                                m_txn.Payment.h_date.year
= daterec.year;
                                                m_txn.Payment.h_date.month
= daterec.month;
                                                m_txn.Payment.h_date.day
= daterec.day;
                                                m_txn.Payment.h_date.hour
= daterec.hour;
                                                m_txn.Payment.h_date.minute
= daterec.minute;
                                                m_txn.Payment.h_date.second
= daterec.second;
                                        }
                                        if (pData=dbdata(m_dbproc, 4))

                        UtilStrCpy(m_txn.Payment.w_street_1, pData, dbd  atlen(m_dbproc, 4));
                                        if (pData=dbdata(m_dbproc, 5))

                        UtilStrCpy(m_txn.Payment.w_street_2, pData, dbdatlen(m_dbproc, 5));
                                        if (pData=dbdata(m_dbproc, 6))

                        UtilStrCpy(m_txn.Payment.w_city, pData, dbdatlen(m_dbproc, 6));
                                        if (pData=dbdata(m_dbpro c, 7))

                        UtilStrCpy(m_txn.Payment.w_state, pData, dbdatlen(m_dbproc, 7));
                                        if (pData=dbdata(m_dbproc, 8))

                        UtilStrCpy(m_txn.Payment.w_zip, pData, dbdatlen(m_dbproc, 8));
                                        if (pData=dbdata(m_dbproc, 9))

                        UtilStrCpy(m_txn.Payment.d_street_1, pDat  a, dbdatlen(m_dbproc, 9));
                                        if (pData=dbdata(m_dbproc, 10))

                        UtilStrCpy(m_txn.Payment.d_street_2, pData, dbdatlen(m_dbproc, 10));
                                        if (pData=dbdata(m_dbproc, 11))

                        UtilStrCpy(m_txn.Payment.d_city, pData, dbdatlen(m_dbproc, 11));
                                        if (pData=dbda ta(m_dbproc, 12))

                        UtilStrCpy(m_txn.Payment.d_state, pData, dbdatlen(m_dbproc, 12));
                                        if (pData=dbdata(m_dbproc, 13))

                        UtilStrCpy(m_txn.Payment.d_zip, pData, dbdatlen(m_dbproc, 13));
                                        if (pData=dbdata(m_dbproc, 14))

                        UtilStrCpy(m_txn.Payment.c _first, pData, dbdatlen(m_dbproc, 14));
                                        if (pData=dbdata(m_dbproc, 15))

                        UtilStrCpy(m_txn.Payment.c_middle, pData, dbdatlen(m_dbproc, 15));
                                        if (pData=dbdata(m_dbproc, 16))

                        UtilStrCpy(m_txn.Payment.c_street_1, pData, dbdatlen(m_dbproc, 16));
                                        if (pData=dbdata(m_dbproc, 17))

                        UtilStrCpy(m_txn.Payment.c_street_2, pData, dbdatlen(m_dbproc, 17));
                                        if (pData=dbdata(m_dbproc, 18))

                        UtilStrCpy(m_txn.Payment.c_city, pData, dbdatlen(m_dbproc, 18));
                                        if (pData=dbdata(m_dbproc, 19))

                        UtilStrCpy(m_txn.Payment.c_state, pData, dbdatlen(m_dbproc, 19));
                                        if (pData=dbdata(m_dbproc, 20))

                        UtilStrCpy(m_txn.Payment.c_zip, pData, dbdatlen(m_dbproc, 20));
                                        if (pData=dbdata(m_dbproc, 21))

                        UtilStrCpy(m_txn.Payment.c_phone, pData, dbdatlen(m_dbp   roc, 21));
                                        if (pData=dbdata(m_dbproc, 22))
                                        {
                                                datetime = *((DBDATETIME *)
pData);
                                                dbdatecrack(m_dbproc,
&daterec, &datetime);
                                                m_txn.Payment.c_since.year
= daterec.year;
                                                m_txn.Payment.c_since.month
= daterec.month;
                                                m_txn.Payment.c_since.day
= daterec.day;
                                                m_txn.Payment.c_since.hour
= daterec.hour;

            m_txn.Payment.c_since.minute = daterec.minute;

            m_txn.Payment.c_since.second = daterec.second;
                                        }
                                        if(pData=dbdata(m_dbproc, 23))

                        UtilStrCpy(m_txn.Payment.c_credit, pData, dbdatlen(m_dbproc, 23));
                                        if(pData=dbdata(m_dbproc, 24))
                                                dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,24), SQLFLT8, (BYTE

*)&m_txn.Payment.c_credit_lim, 8 );
                                        if(pData=dbdata(m_dbproc, 25))
                                                dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,25), SQLFLT8, (BYTE

*)&m_txn.Payment.c_discount, 8);
                                        if(pData=dbdata(m_dbproc, 26))
                                                dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen  (m_dbproc,26), SQLFLT8, (BYTE

*)&m_txn.Payment.c_balance, 8);
                                        if(pData=dbdata(m_dbproc, 27))

                        UtilStrCpy(m_txn.Payment.c_data, pData, dbdatlen(m_dbproc, 27));

                                        DiscardNextRows(0);
                                        DiscardNextResults(0);


                                        if (m_txn.Payment.c_id == 0)
                                                throw new
CTPCC_DBLIB_ERR( CTPCC_DBLIB_ERR::ERR_INVALID_CUST );
                                        else

                        m_txn.Payment.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::OrderStatus()
{
            int                                 i;
            DBDATETIME      datetime;
            DBDATEREC       daterec;

            int                                 iTryCount = 0;
            RETCODE                     rc;
            const BYTE      *pData;

            ResetError();

            while (TRUE)
            {
                        try
                        {
                                        dbrpcinit(m_dbproc, "tpcc_orderstatus",
0);

                                        dbrpcparam(m_dbproc, NULL, 0, SQLINT2,   -
1, -1, (BYTE *) &m_txn.OrderStatus.w_id);  dbrpcparam(m_dbproc, NULL, 0, SQLINT1,   -
1, -1, (BYTE *) &m_txn.OrderStatus.d_id);  dbrpcparam(m_dbproc, NULL, 0, SQLINT4  , -
1, -1, (BYTE *) &m_txn.OrderStatus.c_id);
```

```
                                        // if customer id is zero, then order
status is by name
                                        if (m_txn.OrderStatus.c_id == 0)
                                                dbrpcparam(m_dbproc, NULL,
0, SQLCHAR, -1, strlen(m_txn.OrderStatus.c_last), (unsigned char
*)m_txn.OrderStat us.c_last);

                                        if (dbrpcexec(m_dbproc) == FAIL)
                ThrowError(CDBLIBERR::eDbRpcExec);
                                        // Get order lines
                                        if (dbresults(m_dbproc) != SUCCEED)
                                        {
                                                if ((m_DbLibErr == NULL) &&
(m_SqlErr == NULL))
                                                        throw new
CTPCC_DBLIB_ERR( CTPCC_DBLIB_ERR::ERR_NO_SUCH_ORDER );
                                                else
                ThrowError(CDBLIBERR::eDbResults);
                                        }
                                        if (dbnumcols(m_dbproc) != 5)
                ThrowError(CDBLIBERR::eWrongNumCols);
                                        i = 0;
                                        while (TRUE)
                                        {
                                                rc = dbnextrow(m_dbproc);
                                                if (rc == NO_MORE_ROWS)
                                                        break;
                                                if (rc != REG_ROW)
                ThrowError(CDBLIBERR::eDbNextRow);
                                                if(pData=dbdata(m_dbproc,
1))
                m_txn.OrderStatus.OL[i].ol_supply_w_id = (*(DBSMALLINT *) pData);
                                                if(pData=dbdata(m_dbproc,
2))
                m_txn.OrderStatus.OL[i].ol_i_id = (*(DBINT *) pData);
                                                if(pData=dbdata(m_dbproc,
3))
                m_txn.OrderStatus.OL[i].ol_quantity = (*(DBSMALLINT *) pData);
                                                if(pData=dbdata(m_dbproc,
4))
               dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,4),
                  SQLFLT8, (BYTE *)&m_txn.OrderStatus.OL[i].ol_amount, 8);
                                                if(pData=dbdata(m_dbproc,
5))
                                                {
                                                        datetime =
*((DBDATETIME *) pData);
                dbdatecrack(m_dbproc, &daterec, &datetime);
                m_txn.OrderStatus.OL[i].ol_delivery_d.year   = daterec  .year;
                m_txn.OrderStatus.OL[i].ol_delivery_d.month  = daterec.month;
                m_txn.OrderStatus.OL[i].ol_delivery_d.day    = daterec.day;
                m_txn.OrderStatus.OL[i].ol_delivery_d.hour   = daterec.hour;
                m_txn.OrderStatus.OL[i].ol_delivery_d.minute =   daterec.minute;
                m_txn.OrderStatus.OL[i].ol_delivery_d.second = daterec.second;
                                                }
                                                i++;
                                        }
                                        m_txn.OrderStatus.o_ol_cnt = i;

                                        if (dbresults(m_dbproc) != SUCCEED)
                ThrowError(CDBLIBERR::eDbResults);
                                        if (dbnextrow(m_dbproc) != REG_R OW)
                ThrowError(CDBLIBERR::eDbNextRow);
                                        if (dbnumcols(m_dbproc) != 8)
                ThrowError(CDBLIBERR::eWrongNumCols);
                                        if(pData=dbdata(m_dbproc, 1))
                                                m_txn.OrderStatus.c_id =
(*(DBINT *) pData);
                                        if(pData=dbdata(m_dbproc, 2))
                UtilStrCpy(m_txn .OrderStatus.c_last, pData, dbdatlen(m_dbproc,2));
                                        if(pData=dbdata(m_dbproc, 3))
                UtilStrCpy(m_txn.OrderStatus.c_first, pData, dbdatlen(m_dbproc,3));
                                        if(pData=dbdata(m_dbproc, 4))
                UtilStrCpy(m_txn.OrderStatus.c_middle, pData, dbdatlen(m_dbproc   ,
4));
                                        if(pData=dbdata(m_dbproc, 5))
                                        {
                                                datetime = *((DBDATETIME *)
pData);
                                                dbdatecrack(m_dbproc,
&daterec, &datetime);
                m_txn.OrderStatus.o_entry_d.year   = daterec.year;
                m_txn.OrderStatus.o_entry_d.mon th  = daterec.month;
                m_txn.OrderStatus.o_entry_d.day    = daterec.day;
                m_txn.OrderStatus.o_entry_d.hour   = daterec.hour;
                m_txn.OrderStatus.o_entry_d.minute = daterec.minute;
                m_txn.OrderStatus.o_entry_d.second = daterec.second;
                                                }
                                                if(pData=dbdata(m_dbproc, 6))
                m_txn.OrderStatus.o_carrier_id = (*(DBSMALLINT *) pData);
                                                if(pData=dbdata(m_dbproc, 7))
                                                        dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,7),
SQLFLT8, (BYTE *)&m_txn.OrderStatus.c_balance, 8);
                                                if(pData=dbdata(m_dbproc, 8))
                                                        m_txn.OrderStatus.o_id =
(*(DBINT *) pData);
                                                DiscardNextRows(0);
                                                DiscardNextResults(0);

                                                if (m_txn.OrderStatus.o_ol_cnt == 0)
                                                        throw new
CTPCC_DBLIB_ERR(  CTPCC_DBLIB_ERR::ERR_NO_SUCH_ORDER );
                                                else if (m_txn.OrderStatus.c_id == 0 &&
m_txn.OrderStatus.c_last[0] == 0)
                                                        throw new
CTPCC_DBLIB_ERR( CTPCC_DBLIB_ERR::ERR_INVALID_CUST );
                                                else
                m_txn.OrderStatus.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::Delivery()
{
                int                             i;
                int                             iTryCount = 0;
                const BYTE      *pData;
                ResetError();
                while (TRUE)
                {
                        try
                        {
                                dbrpcinit(m_dbproc, "tpcc_delivery", 0);
                                dbrpcparam(m_dbproc, NULL, 0, SQLINT2,   -
1, -1, (BYTE *) &m_txn.Delivery.w_id);
                                dbrpcparam(m_dbproc, NULL, 0, SQLINT1,   -
1, -1, (BYTE *) &m_txn.Del ivery.o_carrier_id);
                                if (dbrpcexec(m_dbproc) == FAIL)
                ThrowError(CDBLIBERR::eDbRpcExec);
                                if (dbresults(m_dbproc) != SUCCEED)
                ThrowError(CDBLIBERR::eDbResults);
                                if (dbnextrow(m_dbproc) != REG_ROW)
                ThrowError(CDBLIBERR::eDbNextRo w);
                                if (dbnumcols(m_dbproc) != 10)
                ThrowError(CDBLIBERR::eWrongNumCols);
                                for (i=0; i<10; i++)
                                {
                                        if (pData = dbdata(m_dbproc,
i+1))
                m_txn.Delivery.o_id[i] = *((DBINT *)pData);
                                        }
                                        DiscardNextRows(0);
                                        DiscardNextResults(0);

                                        m_txn.Delivery.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::ResetError()
{
                if (m_DbLibErr != NULL)
                {
                        delete m_DbLibErr;
                        m_DbLibErr = (CDBLIBERR*)NULL;
                }
                if (m_SqlErr != NULL)
                {
                        delete m_SqlErr;
                        m_SqlErr = (CSQLERR*)NULL;
                }
                return;
}
```

db_dblib_dll/src/tpcc_dblib.h

```
/*              FILE:                   TPCC_DBLIB.H
 *                                              Microsoft TPC -C Kit Ver.
4.20.000
 *              All Rights Reserved
 *                                              Copyright Microsoft, 1999
 *                                              Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
 *
 *              PURPOSE:        Header file for TPC -C txn class implementation.
 *
 *  Change history:
 *                              4.20.000 - updated rev number to match kit
 */
#pragma once

#ifndef PDBPROCESS
#define DBPROCESS void   // dbprocess structure type
typedef DBPROCESS * PDBPROCESS;
#endif

// need to declare functions for import, unless define has alread   y been created
// by the DLL's .cpp module for export.
#ifndef DllDecl
#define DllDecl  __declspec( dllimport )
#endif

class CSQLERR : public CBaseErr
{
                public:

                        CSQLERR(void)
                        {
                                m_msgno = 0;
                                m_msgstate = 0;
                                m_severity = 0;
                                m_msgtext = NUL L;
                        };

                        ~CSQLERR()
                        {
                                delete [] m_msgtext;
                        };

                        int                             m_msgno;
                        int                             m_msgstate;
                        int                             m_severity;
                        char    *m_msgtext;

                        int ErrorType() {return ERR_TYPE_SQL;};
                        int ErrorNum() {return m_msgno;};
                        char *ErrorText() {return m_msgtext;};
```

```
};

class CDBLIBERR : public CBaseErr
{
        public:
                enum ACTION
                {
                        eNone,
                        eUnknown,
                        eLogin,
        // error from dblogin
                        eDbOpen,
        // error from dbopen
                        eDbUse,
        // error from dbuse
                        eDbSqlExec,
        // error from dbsqlexec
                        eDbSet,
        // error  from one of the dbset* routines
                        eDbNextRow,
        // error from dbnextrow
                        eWrongRowCount,
        // more or less rows returned than expected
                        eWrongNumCols,
        // more or less columns returned than expected
                        eDbResults,
        // error from dbresults
                        eDbRpcExec,
        // error from dbrpcexec
                        eDbSetMaxProcs,
        // error from dbsetmaxprocs
                        eDbProcHandler
        // error from either dbprocerrhandle or dbprocmsghandle
                };

                CDBLIBERR(ACTION eAction, int severity = 0, int
dberror = 0, int oserr = 0)
                {
                        m_eAction =  eAction;
                        m_severity = severity;
                        m_dberror = dberror;
                        m_oserr = oserr;

                        m_dberrstr = NULL;
                        m_oserrstr = NULL;
                };

                ~CDBLIBERR()
                {
                        delete [] m_dberrstr;
                        delete [] m_oserrstr;
                };

                ACTION        m_eAction;
                int                             m_severity;
                int                             m_dberror;
                int                             m_oserr;
                char   *m_dberrstr;
                char   *m_oserrstr;

                int ErrorType() {return ERR_TYPE_DBLIB;};
                int ErrorNum() {return m_dberror;};
                char *ErrorText() {return m_dberrstr;};

};

class CTPCC_DBLIB_ERR : public CBaseErr
{
        public:
                enum CTPCC_DBLIB_ERRS
                {
                        ERR_WRONG_SP_VERSION = 1,    // "Wrong
version of stored procs on database server"
                        ERR_INVALID_CUST,
        // "Invalid Customer id,name."
                        ERR_NO_SUCH_ORDER,
        // "No orders found for customer."
                        ERR_RETRIED_TRANS,
        // "Retries befor e transaction succeeded."
                };

                CTPCC_DBLIB_ERR( int iErr ) { m_errno = iErr;
m_iTryCount = 0; };

                CTPCC_DBLIB_ERR( int iErr, int iTryCount ) { m_errno =
iErr; m_iTryCount = iTryCount; };

                int                             m_errno;
                int                             m_iTryCount;

                int ErrorType() {return  ERR_TYPE_TPCC_DBLIB;};
                int ErrorNum() {return m_errno;};

                char *ErrorText();
};

class DllDecl CTPCC_DBLIB : public CTPCC_BASE
{
        private:
                // declare variables and private functions here...
                PDBPROCESS     m_dbproc;
                CDBLIBERR      *m_DbLibErr;                    // not
allocated until needed (maybe never)
                CSQLERR                         *m_SqlErr;
        // not allocated until needed (maybe never)
                int                                             m_MaxRetries;
        // retry count on deadlock

                void DiscardNextRows(int iExpectedCount);
                void DiscardNextResults(int iExpectedCount);
                void ThrowError( CDBLIBERR::ACTION eAction );
                void ResetError();

                union
                {
                        NEW_ORDER_DATA
        NewOrder;
                        PAYMENT_DATA                Payment;
                        DELIVERY_DATA               Delivery;
                        STOCK_LEVEL_DATA            StockLevel;
                        ORDER_STATUS_DATA           OrderStatus;
                } m_txn;

        public:
                CTPCC_DBLIB( LPCSTR szServer, LPCSTR szUser, LPCSTR
szPassword, LPCSTR szHost, LPCSTR szDatabase );
                ~CTPCC_DBLIB(void);

                inline PNEW_ORDER_DATA
        BuffAddr_NewOrder()                     { return
&m_txn.NewOrder;    };
                inline PPAYMENT_DATA
        BuffAddr_Payment()                      { return
&m_txn.Payment ;     };
                inline PDELIVERY_DATA
        BuffAddr_Delivery()                     { return
&m_txn.Delivery;    };
                inline PSTOCK_LEVEL_DATA    BuffAddr_StockLevel()
        { return &m_txn.StockLevel;  };
                inline PORDER_STATUS_DATA   BuffAddr_OrderStatus()
        { return &m_txn.OrderStatus; };

                void NewOrder               ();
                void Payment                ();
                void Delivery               ();
                void StockLevel                         ();
                void OrderStatus            ();


                // these are public because they must be called from
the dblib err_handler and msg_hangler
                // outside of the class
                void SetDbLibError(int severi ty, int dberr, int oserr,
LPCSTR dberrstr, LPCSTR oserrstr);
                void SetSqlError( int msgno, int msgstate, int
severity, LPCSTR msgtext );

};

extern "C" DllDecl CTPCC_DBLIB* CTPCC_DBLIB_new
                ( LPCSTR szServer, LPCSTR szUser, LPCSTR szPassword, LPCSTR szHo   st,
LPCSTR szDatabase );

typedef CTPCC_DBLIB* (TYPE_CTPCC_DBLIB)(LPCSTR, LPCSTR, LPCSTR, LPCSTR, LPCSTR);
```

db_odbc_dll/db_odbc_dll.dsp

```
# Microsoft Developer Studio Project File   - Name="db_odbc_dll"  - Package
Owner=<4>
# Microsoft Developer Studio Generate  d Build File, Format Version 6.00
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Dynamic  -Link Library" 0x0102

CFG=db_odbc_dll  - Win32 IceCAP
!MESSAGE This is not a valid makefile. To build this project using NMAKE,
!MESSAGE use the Export Makefile command a  nd run
!MESSAGE
!MESSAGE NMAKE /f "db_odbc_dll.mak".
!MESSAGE
!MESSAGE You can specify a configuration when running NMAKE
!MESSAGE by defining the macro CFG on the command line. For example:
!MESSAGE
!MESSAGE NMAKE /f "db_odbc_dll.mak" CFG="db_odbc_dll    - Win32 IceCAP"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "db_odbc_dll  - Win32 Release" (based on "Win32 (x86) Dynamic  -Link
Library")
!MESSAGE "db_odbc_dll  - Win32 Debug" (based on "Win32 (x86) Dynamic  -Link
Library")
!MESSAGE "db_odbc_dll  - Win32 IceCAP" (based on "Win32 (x86) Dynamic  -Link
Library")
!MESSAGE

# Begin Project
# PROP AllowPerConfigDependencies 0
# PROP Scc_ProjName ""
# PROP Scc_LocalPath ""
CPP=cl.exe
MTL=midl.exe
RSC=rc.exe

!IF  "$(CFG)" == "db_odbc_dll  - Win32 Release"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX
/FD /c
# ADD CPP /nologo /MD /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /FD /c
# ADD BASE MTL /no logo /D "NDEBUG" /mktyplib203 /o /win32 "NUL"
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o /win32 "NUL"
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspoo   l.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib

odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
/out:". \bin/tpcc_odbc.dll"

!ELSEIF  "$(CFG)" == "db_odbc_dll   - Win32 Debug"

# 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
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD CPP /nologo /MDd /W3 /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS" /YX
/FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o /win32    "NUL"
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o /win32 "NUL"
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gd  i32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/pdbtype:sept
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib

odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/out:". \bin/tpcc_odbc.dll" /pdbtype:sept

!ELSEIF  "$(CFG)" == "db_odbc_dll   - Win32 IceCAP"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "db_odbc_"
# PROP BASE Intermediate_Dir "db_odbc_"
# PROP BASE Ignore_Export_Lib 0
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_Di r ".\obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MDd /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D
"_WINDOWS" /YX /FD /Gh /c
# ADD CPP /nologo /MD /W3 /Gm /GX /Zi /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /D
"ICECAP" /YX /FD  /Gh /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o /win32 "NUL"
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o /win32 "NUL"
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /no logo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/out:". \bin/tpcc_odbc .dll" /pdbtype:sept
# ADD LINK32 icap.lib kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/out:". \bin/tpcc_o dbc.dll" /pdbtype:sept

!ENDIF

# Begin Target

# Name "db_odbc_dll  - Win32 Release"
# Name "db_odbc_dll  - Win32 Debug"
# Name "db_odbc_dll  - Win32 IceCAP"
# Begin Group "Source"

# PROP Default_Filter "*.cpp"
# Begin Source File

SOURCE=. \src\tpcc_odbc.c pp
# End Source File
```

```
# End Group
# Begin Group "Header"

# PROP Default_Filter "*.h"
# Begin Source File

SOURCE=..\common\src\error.h
# End Source File
# Begin Source File

SOURCE=.\src\tpcc_odbc.h
# End Source File
# Begin Source File

SOURCE=..\common\src\trans.h
# End Source File
# Begin Source File

SOURCE=..\common\src\txn_base.h
# End Source File
# End Group
# End Target
# End Project
```

db_odbc_dll/src/tpcc_odbc.cpp

```
/*            FILE:                         TPCC_ODBC.CPP
 *                                                  Microsoft TPC-C Kit Ver.
4.20.000
 *                                                  Copyright Micros oft, 1999
 *             All Rights Reserved
 *
 *                                                  Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
 *
 *            PURPOSE:      Implements ODBC calls for TPC -C txns.
 *            Contact:      Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                          4.20.000 - updated rev number to match kit
 *                          4.10.001 - not deleting error class in catch handler
on deadlock retry;
 *                                                    not a functional bug,
but a memory leak
 */

#include <windows.h>
#include <stdio.h>
#include <assert.h>

#define DBNTWIN32
#include <sqltypes.h>
#include <sql.h>
#include <sqlext.h>
#include <odbcss.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_odbc.h"

// version string; must match return value from tpcc_version stored proc
const char     sVersion[] = "4.10.000";

const iMaxRetries = 10;                    // how many retries on deadlock

const int iErrOleDbProvider = 7312;
const char sErrTimeoutExpired[] = "Timeout expired";

static SQLHENV henv = SQL_NULL_HENV;
            // ODBC environment handle

BOOL APIENTRY DllMain(HMODULE hModule, DWORD ul_reason_for_call, LPVOID
lpReserved)
{
            switch( ul_reas on_for_call )
            {
                        case DLL_PROCESS_ATTACH:
                                    DisableThreadLibraryCalls(hModule);
                                    if ( SQLAllocHandleStd(SQL_HANDLE_ENV,
SQL_NULL_HANDLE, &henv) != SQL_SUCCESS )
                                                return FALSE;
                                    break;

                        case DLL_PROCESS_DETACH:
                                    if (henv != NULL)
                                                SQLFreeEnv(henv);
                                    break;

                        default:
                                    /* nothing */;
            }
            return TRUE;
}

/* FUNCTION: CTPCC_ODBC_ERR::ErrorText
 *
 */

char* CTPCC_ODBC_ERR::ErrorText(void)
{
            int i;

            static SERRORMSG errorMsgs[] =
            {
                        { ERR_WRONG_SP_VERSION,                    "Wrong
version of stored proc s on database server"          },
                        { ERR_INVALID_CUST,
            "Invalid Customer id,name."
                                    },
                        { ERR_NO_SUCH_ORDER,                       "No orders
found for customer."
            },
                        { ERR_RETRIED_TRANS,                       "Retries
before transaction succeeded."
            },
                        { 0,
                        ""


                                                }
            };

            static char szNotFound[] = "Unknown error number.";

            for(i=0; errorMsgs[i].szMsg[0]; i++)
            {
                        if ( m_errno == errorMsgs[i].iError )
                                    break;
            }
            if ( !errorMsgs[i].szMsg[0] )
                        return szNotFound;
            else
                        return errorMsgs[i].szMsg;
}

// wrapper routine  for class constructor
__declspec(dllexport) CTPCC_ODBC* CTPCC_ODBC_new(
            LPCSTR szServer,                                   // name of SQL server
            LPCSTR szUser,                                                 // user name
for login
            LPCSTR szPassword,                                 // password for login
            LPCSTR szHost,                                                 // not used
            LPCSTR szDatabase )                                // name of database to use
{
            return new CTPCC_ODBC( szServer, szUser, szPassword, szHost,
szDatabase );
}


CTPCC_ODBC::CTPCC_ODBC (
            LPCSTR szServer,
            // name of SQL server
            LPCSTR szUser,
            // user name for login
            LPCSTR szPassword,
            // password for lo gin
            LPCSTR szHost,
            // not used
            LPCSTR szDatabase
            // name of database to use
            )
{
            RETCODE                        rc;

            // initialization
            m_hdbc = SQL_NULL_HDBC;
            m_hstmt = SQL_NULL_HSTMT;

            m_hstmtNewOrder = SQL_NULL_HSTMT;
            m_hstmtPayment = SQL_NULL_HSTMT;
            m_hstmtDelivery = SQL_NULL_HSTMT;
            m_hstmtOrderStatus = SQL_NULL_HSTMT;
            m_hstmtStockLevel = SQL_NULL_HSTMT;

            m_descNewOrderCols1 = SQL_NULL_HDESC;
            m_descNewOrderCols2 = SQL_NULL_HDESC;
            m_descOrderStatusCols1 = SQL_NULL_HDESC;
            m_descOrderStatusCols2 = SQL_NULL _HDESC;


            if ( SQLAllocHandle(SQL_HANDLE_DBC, henv, &m_hdbc) != SQL_SUCCESS )
                        ThrowError(CODBCERR::eAllocHandle);

            if ( SQLSetConnectOption(m_hdbc, SQL_PACKET_SIZE, 4096) !=
SQL_SUCCESS )
                        ThrowError(CODBCERR::eConnOption);

            {
                        char
            szConnectStr[2 56];
                        char
            szOutStr[1024];
                        SQLSMALLINT                iOutStrLen;

                        sprintf( szConnectStr, "DRIVER=SQL
Server;SERVER=%s;UID=%s;PWD=%s;DATABASE=%s",
                                    szServer, szUser, szPassword,
szDatabase );

                        rc = SQLDriverConnect(m_hdbc, NULL,
(SQLCHAR*)szConnectStr, sizeo f(szConnectStr),
                                    (SQLCHAR*)szOutStr, sizeof(szOutStr),
&iOutStrLen, SQL_DRIVER_NOPROMPT );

                        if (rc != SQL_SUCCESS && rc != SQL_SUCCESS_WITH_INFO)
                                    ThrowError(CODBCERR::eConnect);
            }

            if (SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc, &m_hstmt) !=
SQL_SUCCESS)
                        ThrowError(CODBCERR::eAllocHandle);

            {
                        char                       buffer[128];

                        // set some options affecting connection behavior
                        strcpy(buffer, "set nocount on set XACT_ABORT ON");
                        rc = SQLExecDirect(m_hstmt, (unsigned char *)buffer,
SQL_NTS);
                        if (rc != SQL _SUCCESS && rc != SQL_SUCCESS_WITH_INFO)
                                    ThrowError(CODBCERR::eExecDirect);

                        // verify that version of stored procs on server is
correct
                        char db_sp_version[10];
                        strcpy(buffer, "{call tpcc_version}");
                        rc = SQLExecDirect(m_hstmt, (unsigned char *)  buffer,
SQL_NTS);
                        if (rc != SQL_SUCCESS && rc != SQL_SUCCESS_WITH_INFO)
                                    ThrowError(CODBCERR::eExecDirect);
                       if ( SQLBindCol(m_hstmt, 1, SQL_C_CHAR, &db_sp_version,
sizeof(db_sp_version), NULL) != SQL_SUCCESS )
                                    ThrowError(CODBCERR::eBindCol);
                        if ( SQLFetch(m_hstmt) == SQL_ERROR )
                                    ThrowError(CODBCERR::eFetch);
                        if (strcmp(db_sp_version,sVersion))
                                    throw new
CTPCC_ODBC_ERR( CTPCC_ODBC_ERR::ERR_WRONG_SP_VERSION );

                        SQLFreeHandle(SQL_HANDLE_STMT, m_hstmt);
            }

            // Bind parameters for each of t  he transactions
            InitNewOrderParams();
            InitPaymentParams();
            InitOrderStatusParams();
            InitDeliveryParams();
            InitStockLevelParams();
}

CTPCC_ODBC::~CTPCC_ODBC( void )
{
            // note: descriptors are automatically released when the connection
is dropped
            SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtNewOrder);
            SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtPayment);
            SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtDelivery);
            SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtOrderStatus);
            SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtStockLevel);

            SQLDisconnect(m_hdbc);
            SQLFreeHandle(SQL_HANDLE_DBC, m_hdbc);
}

void CTPCC_ODBC::ThrowError( CODBCERR::ACTION eAction )
{
            RETCODE                    rc;
            SDWORD                     lNativeError;
            char                       szState[6];
            char                       szMsg[SQL_MAX_MESSAGE_LENGTH];
            char                       szTmp[6*SQL_MAX_MESSAGE_LENGTH];
            CODBCERR   *pODBCErr;                                          // not
allocated until needed (maybe never)

            pODBCErr = new CODBCERR();

            pODBCErr->m_NativeError = 0;
            pODBCErr->m_eAction = eAction;
            pODBCErr->m_bDeadLock = FALSE;

            szTmp[0] = 0;
            while (TRUE)
            {
                        rc = SQLError(henv, m_hdbc, m_ hstmt, (BYTE *)&szState,
&lNativeError,
                                                                               (BYTE
*)&szMsg, sizeof(szMsg), NULL);
                        if (rc == SQL_NO_DATA)
                                    break;

                        // check for deadlock
                        if (lNativeError == 1205 || (lNativeError ==
iErrOleDbProvider &&
                                    strstr(szMsg, sErrTimeoutExpired) !=
NULL))
                                    pODBCErr->m_bDeadLock = TRUE;

                        // capture the (first) database error
                        if (pODBCErr->m_NativeError == 0 && lNativeError != 0)
                                    pODBCErr->m_NativeError = lNativeError;

                        // quit if there isn't enough room to concatenate
error text
                        if ( (strlen(szMsg) + 2) > (sizeof(szTmp)  -
strlen(szTmp)) )
                                    break;

                        // include line break after first error msg
                        if (szTmp[0] != 0)
                                    strcat( szTmp, " \n");
                        strcat( szTmp, szMsg );
            }

            if (pODBCErr->m_odbcerrstr != NULL)
            {
                        delete [] pODBCErr->m_odbcerrs tr;
                        pODBCErr->m_odbcerrstr = NULL;
```

```
		}

		if (strlen(szTmp) > 0)
		{
			pODBCErr->m_odbcerrstr = new char[ strlen(szTmp)+1 ];
			strcpy( pODBCErr->m_odbcerrstr, szTmp );
		}

		SQLFreeStmt(m_hstmt, SQL_CLOSE);
		throw pODBCErr;
}

void CTPCC_ODBC::InitStockLevel Params()
{
		if (   SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc,
&m_hstmtStockLevel) != SQL_SUCCESS )
			ThrowError(CODBCERR::eAllocHandle);

		m_hstmt = m_hstmtStockLevel;

		int i = 0;
		if (   SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT, SQL_C_SSHORT,
SQL_SMALLINT, 0, 0, &m_txn.StockLevel.w_id, 0, NULL) !=

SQL_SUCCESS
			|| SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_UTINYINT, SQL_TINYINT, 0, 0, &m_txn.StockLevel.d_id, 0, NULL) !=

SQL_SUCCESS
			|| SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.StockLevel.threshold, 0, NULL) !=

SQL_SUCCESS
			)
			ThrowError(CODBCERR::eBindParam);

	       if ( SQLBindCol(m_hstmt, 1, SQL_C_SLONG, &m_txn.StockLevel.low_stock,
0, NULL) != SQL_SUCCESS )
			ThrowError(CODBCERR::eBindCol );
}

void CTPCC_ODBC::StockLevel()
{
		RETCODE			rc;
		int					iTryCount = 0;

		m_hstmt = m_hstmtStockLevel;

		while (TRUE)
		{
			try
			{
				rc = SQLExecDirectW(m_hstmt,
(SQLWCHAR*)L"{call tpcc_stocklevel(?,?,?)}", SQL_NTS);
				if (rc != SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)

		ThrowError(CODBCERR::eExecDirect);

				if ( SQLFetch(m_hstmt) == SQL_ERROR )

		ThrowError(CODBCERR::eFetch);

				SQLFreeStmt(m_hstmt, SQL_CLOSE);

				m_txn.StockLevel.exec_status_code = eOK;
				break;
			}
			catch (CODBCERR *e)
			{
				if ((!e->m_bDeadLock) || (++iTryCount >
iMaxRetries))
					throw;

				// hit deadlock; backoff for
increasingly longer period
				delete e;
				Sleep(10 * iTryCount);
			}
		}

//		if (iTryCount)
//			throw new
CTPCC_ODBC_ERR(CTPCC_ODBC_ERR::E RR_RETRIED_TRANS, iTryCount);
}

void CTPCC_ODBC::InitNewOrderParams()
{
		if (   SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc, &m_hstmtNewOrder) !=
SQL_SUCCESS
			|| SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
&m_descNewOrderCols1) != SQL_SUCCESS
			|| SQLAllocHandle( SQL_HANDLE_DESC, m_hdbc,
&m_descNewOrderCols2) != SQL_SUCCESS
			)
			ThrowError(CODBCERR::eAllocHandle);

		m_hstmt = m_hstmtNewOrder;

		if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC,
m_descNewOrderCols1, SQL_IS_POINTER ) != SQL_SUCCESS )
			ThrowError (CODBCERR::eSetStmtAttr);

		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
			|| SQLBindParameter(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);

		i = 0;
		if (   SQLBindCol(m_hstmt, ++i, S QL_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_SUC CESS )
			ThrowError(CODBCERR::eSetStmtAttr);

		i = 0;
		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()
{
		int
		i;
		RETCODE                                                 rc;
		int
		iTryCount = 0;

                                                        // 0         1         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::eSetStmtA ttr);

		// 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 remo  te warehouse
		m_txn.NewOrder.o_all_local = 1;
		for (i = 0; i < 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)

		ThrowError(CODBCERR::eExecDirect);

				// Get order line results
				m_txn.NewOrder.total_amount = 0;
				for (i = 0; i<m_txn.NewOrder.o_ol_cnt;
i++)
				{
					// set the bind offset
value...
					m_BindOffset = i *
sizeof(m_txn.NewOrder.OL[0]);

					if ( SQLFetch(m_hstmt) ==
SQL_ERROR)

		ThrowError(CODBCERR::eFetch);

					// move to t he next
resultset
					if
( SQLMoreResults(m_hstmt) == SQL_ERROR )

		ThrowError(CODBCERR::eMoreResults);

					m_txn.NewOrder.total_amount
+= m_txn.NewOrder.OL[i].ol_amount;
				}

				// associate the column bindings for the
second result set
				if ( SQLSe tStmtAttrW( m_hstmt,
SQL_ATTR_APP_ROW_DESC, m_descNewOrderCols2, SQL_IS_POINTER ) != SQL_SUCCESS )

		ThrowError(CODBCERR::eSetStmtAttr);

				if ( SQLFetch(m_hstmt) == SQL_ERROR)

		ThrowError(CODBCERR::eFetch);

				SQLFreeStmt(m_hstmt, SQL_CLOSE);

				if (m_no_commit_flag == 1)
				{
					m_txn.NewOrder.total_amount
*= ((1 + m_txn.NewOrder.w_tax + m_txn.NewOrder.d_tax) * (1    -
m_txn.NewOrder.c_discount));

		m_txn.NewOrder.exec_status_code = eOK;
				}
				else

		m_txn.NewOrder.exec_status_code = eInval  idItem;

				break;
			}
			catch (CODBCERR *e)
			{
				if ((!e->m_bDeadLock) || (++iTryCount >
iMaxRetries))
					throw;

				// 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);
}

void CTPCC_ODBC::InitPaymentParams()
{
		if (   SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc, &m_hstmtPayment) !=
SQL_SUCCESS )
```

```
                        ThrowError(CODBCERR::eAllocHandle);

                m_hstmt = m_hstmtPayment;

                int i = 0;
                if (    SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT, SQL_C_SSHORT,
SQL_SMALLINT, 0, 0, &m_txn.Payment.w_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.Payment.c_w_id, 0,    NULL) !=
SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_DOUBLE, SQL_NUMERIC, 6, 2, &m_txn.Payment.h_amount, 0, NULL) !=
SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_UTINYINT, SQL_TINYINT, 0, 0, &m_txn.  Payment.d_id, 0, NULL) !=
SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_UTINYINT, SQL_TINYINT, 0, 0, &m_txn.Payment.c_d_id, 0, NULL) !=
SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SLONG, SQL_INTEGER,  0, 0, &m_txn.Payment.c_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_CHAR, SQL_CHAR, sizeof(m_txn.Payment.c_last), 0,
&m_txn.Payment.c_last, sizeof(m_txn.Payment.c_last), NULL) != SQL_SUCCESS
                        )
                        ThrowError(CODB CERR::eBindParam);

                i = 0;
                if (    SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,     &m_txn.Payment.c_id,
                        0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_last,                  sizeof(m_txn.Payment.c_last), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_TYPE_TIMESTAMP,
&m_txn.Payment.h_date,                  0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.w_street_1,  sizeof(m_txn.Payment.w_street_1), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C  _CHAR,
&m_txn.Payment.w_street_2,  sizeof(m_txn.Payment.w_street_2), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.w_city,                  sizeof(m_txn.Payment.w_city), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CH  AR,
&m_txn.Payment.w_state,                 sizeof(m_txn.Payment.w_state), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.w_zip,                   sizeof(m_txn.Payment.w_zip), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.d_street_1,  sizeof(m_txn.Payment.d_street_1), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.d_street_2,  sizeof(m_txn.Payment.d_street_2), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.d_city,                  sizeof(m_txn.Payment.d_city), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.d_state,                 sizeof(m_txn.Payment.d_state), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.d_zip,                   sizeof(m_txn.Payment.d_zip), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_first,                 sizeof(m_txn.Payment.c_first), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Paym ent.c_middle,   sizeof(m_txn.Payment.c_middle), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_street_1,  sizeof(m_txn.Payment.c_street_1), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Paymen t.c_street_2, sizeof(m_txn.Payment.c_street_2), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_city,                  sizeof(m_txn.Payment.c_city), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c _state,                sizeof(m_txn.Payment.c_state), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_zip,                   sizeof(m_txn.Payment.c_zip), NULL) !=
SQL_SUCCESS
                        || 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, SQL_C_TYPE_TIMESTAMP,
&m_txn.Payment.c_since,                 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_credit,    sizeof(m_txn.Payment.c_credi t), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.Payment.c_credit_lim,0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.Payment.c_discount,  0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_  C_DOUBLE,
&m_txn.Payment.c_balance,   0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_data,                  sizeof(m_txn.Payment.c_data), NULL) !=
SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eBindCol);
}

void CTPCC_ODBC::Payment()
{
                RETCODE                 rc;
                int                             iTryCount = 0;

                m_hstmt = m_hstmtPayment;

                if (m_txn.Payment.c_id != 0)
                        m_txn.Payment.c_last[0] = 0;

                while (TRUE)
                {
                        try
                        {
                                rc = SQLExecDirectW(m_hstmt,
(SQLWCHAR*)L"{call tpcc_payment(?,?,?,?,?,?,?)}", SQL_NTS);
                                if (rc != SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)

                ThrowError(CODBCERR::eExecDirect);

                                if ( SQLFetch(m_hstmt) == SQL_ERROR)

                ThrowError(CODBCERR::eFetch);

                                SQLFreeStmt(m_hstmt, SQL_CLOSE);

                                if (m_txn.Payment.c_id == 0)
                                        throw new
CTPCC_OD BC_ERR( CTPCC_ODBC_ERR::ERR_INVALID_CUST );
                                else

                m_txn.Payment.exec_status_code = eOK;

                                break;
                        }
                        catch (CODBCERR *e)
                        {
                                if ((!e->m_bDeadLock) || (++iTryCount >
iMaxRetries))
                                        throw;

                                // 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);
}

void CTPCC_ODBC::InitOrderStatusParams()
{
                if (    SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc,
&m_hstmtOrderS tatus) != SQL_SUCCESS
                        || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
&m_descOrderStatusCols1) != SQL_SUCCESS
                        || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
&m_descOrderStatusCols2) != SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eAllocHandle);

                m_hstmt = m_hstmtOrd erStatus;

                if (    SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC,
m_descOrderStatusCols1, SQL_IS_POINTER ) != SQL_SUCCESS )
                        ThrowError(CODBCERR::eSetStmtAttr);

                int i = 0;
                if (    SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT, SQL_C_SSHORT,
SQL_SMALL INT, 0, 0, &m_txn.OrderStatus.w_id, 0, NULL) !=
SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_UTINYINT, SQL_TINYINT, 0, 0, &m_txn.OrderStatus.d_id, 0, NULL) !=
SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SLONG, SQL_INTEGER, 0, 0, &m_txn.OrderStatus.c_id, 0, NULL) !=
SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_CHAR, SQL_CHAR, sizeof(m_txn.OrderStatus.c_last), 0,
&m_txn.OrderStatus.c_last, sizeof(m_txn.OrderStatus.c_last),    NULL) != SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eBindParam);

                // configure block cursor
                if (    SQLSetStmtAttrW(m_hstmt, SQL_ATTR_ROW_BIND_TYPE,
(SQLPOINTER)sizeof(m_txn.OrderStatus.OL[0]), 0) != SQL_SUCCESS
                        || SQLSetStmtAttrW(m_hstmt, SQL_ATTR_ROWS_FET  CHED_PTR,
&m_RowsFetched, 0) != SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eSetStmtAttr);

                i = 0;
                if (    SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT,
&m_txn.OrderStatus.OL[0].ol_supply_w_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.OrderStatus.OL[0].ol_i_id, 0, NULL) != SQL_SUCCESS
                        || 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_txn.OrderStatus.OL[0].ol_amount, 0, NULL) != SQL_SU  CCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_TYPE_TIMESTAMP,
&m_txn.OrderStatus.OL[0].ol_delivery_d, 0, NULL) != SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eBindCol);


                if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC,
m_descOrderStatusCols2, SQL_IS_POINTER   ) != SQL_SUCCESS )
                        ThrowError(CODBCERR::eSetStmtAttr);

                i = 0;
                if (    SQLBindCol(m_hstmt, ++i, SQL_C_SLONG, &m_txn.OrderStatus.c_id,
0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.OrderStatus.c_last, sizeof(m_txn.OrderStatus.c  _last), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.OrderStatus.c_first, sizeof(m_txn.OrderStatus.c_first), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.OrderStatus.c_middle, sizeof(m_txn.OrderStatus.c_mid   dle), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_TYPE_TIMESTAMP,
&m_txn.OrderStatus.o_entry_d, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT,
&m_txn.OrderStatus.o_carrier_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstm t, ++i, SQL_C_DOUBLE,
&m_txn.OrderStatus.c_balance, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.OrderStatus.o_id, 0, NULL) != SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eBindCol);
}

void CTPCC_ODBC::OrderStatus()
{
                int
                iTryCount = 0;
                RETCODE
                rc;

                m_hstmt = m_hstmtOrderStatus;

                if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC,
m_descOrderStatusCols1, SQL_IS_POINTER ) != SQL_SUCCESS )
                        ThrowError(CODBCERR::eSetStmtAttr);

                if (m_txn.OrderStatus.c_id != 0)
                        m_txn.OrderStatus.c_last[0] = 0;

                while (TRUE)
                {
                        try
                        {
                                // configure block cursor
                                if ( SQLSetStmtAttrW(m_hstmt,
SQL_ATTR_ROW_ARRAY_SIZE, (SQLPOINTER)1, 0) != SQL_SUCCESS )

                ThrowError(CODBCERR::eSetStmtAttr);

                                rc = SQLExecDirectW(m_hstmt,
(SQLWCHAR*)L"{call tpcc_orderstatus(?,?,?,?)}", SQL_NTS);
                                if ( ((rc == SQL_SUCCESS_WITH_INFO) &&
(m_RowsFetched != 0)) || (rc == SQL_ERROR) )

                ThrowError(CODBCERR::eExecDirect);

                                // configure block cursor
                                if ( SQLSetStmtAttrW(m_hstmt,
SQL_ATTR_ROW_ARRAY_SIZE, (SQLPOINTER)MAX_OL_ORDER_STATUS_ITEMS, 0) !=
SQL_SUCCESS )

                ThrowError(CODBCERR::eSetStmtAttr);

                                rc = SQLFetchScroll( m_hstmt,
SQL_FETCH_NEXT, 0 );
                                if ( ((rc == SQL_SUCCESS_WITH_INFO) &&
(m_RowsFetched != 0)) || (rc == SQL_ERROR) )

                ThrowError(CODBCERR::eFetchScroll);

                                m_txn.OrderStatus.o_ol_cnt =
(short)m_RowsFetched;

                                if (m_txn.OrderStatus.o_ol_cnt != 0)
                                {
                                        if
( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC, m_descOrderStatusCols2,
SQL_IS_POINTER ) != SQL_SUCCESS )

                ThrowError(CODBCERR::eSetStmtAttr);

                                                if
( SQLMoreResults(m_hstmt) == SQL_ERROR )

                ThrowError(CODBCERR::eMoreResults);

                                                if ( (rc =
SQLFetch(m_hstmt)) == SQL_ERROR)

                ThrowError(CODBCERR::eFetch);
                                        }

                                SQLFreeStmt(m_hstmt, SQL_CL OSE);

                                if (m_txn.OrderStatus.o_ol_cnt == 0)
```

```
                                        throw new
CTPCC_ODBC_ERR( CTPCC_ODBC_ERR::ERR_NO_SUCH_ORDER );
                                        else if (m_txn.OrderStatus.c_id == 0 &&
m_txn.OrderStatus.c_last[0] == 0)
                                        throw new
CTPCC_ODBC_ERR( CTPCC_ODBC_ERR::ERR_INVALID_CUST   );
                                        else

                m_txn.OrderStatus.exec_status_code = eOK;

                                        break;
                        }
                        catch (CODBCERR *e)
                        {
                                        if ((!e->m_bDeadLock) || (++iTryCount >
iMaxRetries))
                                        throw;

                                        // 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);
}

void CTPCC_ODBC::InitDeliveryParams()
{
                if (   SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc, &m_hstmtDelivery) !=
SQL_SUCCESS )
                        ThrowError(CO DBCERR::eAllocHandle);

                m_hstmt = m_hstmtDelivery;

                int i = 0;
                if (   SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT, SQL_C_SSHORT,
SQL_SMALLINT, 0, 0, &m_txn.Delivery.w_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.Delivery.o_carrier_id, 0, NULL) !=
SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eBindParam);

                for (i=0;i<10;i++)
                {
                        if ( SQLBindCol(m_hstmt, (UWORD)(i+1), SQL_C_SLONG,
&m_txn.Delivery.o_id[i], 0, NULL) != SQL_SUCCESS   )
                                        ThrowError(CODBCERR::eBindCol);
                }
}

void CTPCC_ODBC::Delivery()
{
                RETCODE                 rc;
                int                             iTryCount = 0;

                m_hstmt = m_hstmtDelivery;

                while (TRUE)
                {
                        try
                        {
                                        rc = SQLExecDirectW(m_hstmt,
(SQLWCHAR*)L"{call tpcc_delivery(?,?)}", SQL_NTS);
                                        if (rc != SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)

                ThrowError(CODBCERR::eExecDirect);

                                        if ( SQLFetch(m_hstmt) == SQL_ERROR )

                ThrowError(CODBCERR::eFetch);

                                        SQLFreeStmt(m_hstmt, SQL_CLOSE);
                                        m_txn.Delivery.exec_status_code = eOK;
                                        break;
                        }
                        catch (CODBCERR *e)
                        {
                                        if ((!e->m_bDeadLock) || (++iTryCount >
iMaxRetries))
                                        throw;

                                        // 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);
}
```

db_odbc_dll/src/tpcc_odbc.h

```
/*              FILE:                   TPCC_ODBC.H
 *                                              Microsoft TPC -C Kit Ver.
4.20.000
 *                                              Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                              Version 4.10.000 audited by
Richard Gimarc,  Performance Metrics, 3/17/99
 *
 *              PURPOSE:        Header file for TPC -C txn class implementation.
 *
 *  Change history:
 *                              4.20.000  - updated rev number to match kit
 */
#pragma once

// need to declare functions for import, unless define has already been crea    ted
// by the DLL's .cpp module for export.
#ifndef DllDecl
#define DllDecl  __declspec( dllimport )
#endif

class CODBCERR : public CBaseErr
{
                public:
                                enum ACTION
                                {
                                                eNone,
                                                eUnknown,
                                                eAllocConn,
                // error from SQLAllocConnect
                                                eAllocHandle,           // error from
SQLAllocHandle
                                                eConnOption,            // error from
SQLSetConnectOption
                                                eConnect,
                // error from SQLConnect
                                                eAllocStmt,
                // error from SQLAllocStmt
                                                eExecDirect,            // error from
SQLExecDirect
                                                eBindParam,
                // error from SQLBindPara meter
                                                eBindCol,
                // error from SQLBindCol
                                                eFetch,
                // error from SQLFetch
                                                eFetchScroll,           // error from
SQLFetchScroll
                                                eMoreResults,           // error from
SQLMoreResults
                                                ePrepare,
                // error from SQLPrepare
                                                eExecute,
                // error from SQLExecute
                                                eSetEnvAttr,            // error from
SQLSetEnvAttr
                                                eSetStmtAttr            // error from
SQLSetStmtAttr
                                };

                                CODBCERR(void)
                                {
                                                m_eAction = eNone;
                                                m_NativeError = 0;
                                                m_bDeadLock = FALSE;
                                                m_odbcerrstr = NULL;
                                };

                                ~CODBCERR()
                                {
                                                if (m_odbcerrstr ! = NULL)
                                                                delete [] m_odbcerrstr;
                                };

                                ACTION          m_eAction;
                                int                             m_NativeError;
                                BOOL            m_bDeadLock;
                                char    *m_odbcerrstr;

                                int ErrorType() {return ERR_TYPE_ODBC;};
                                int ErrorNum() {return m_NativeError;};
                                char *ErrorText() {return m_odbcerrstr;}  ;

};

class CTPCC_ODBC_ERR : public CBaseErr
{
                public:
                                enum TPCC_ODBC_ERRS
                                {
                                                ERR_WRONG_SP_VERSION = 1,    // "Wrong
version of stored procs on database server"
                                                ERR_INVALID_CUST,
                // "Invalid Customer id,name."
                                                ERR_NO_SUCH_ORDER,
                // "No order s found for customer.""
                                                ERR_RETRIED_TRANS,
                // "Retries before transaction succeeded."
                                };

                                CTPCC_ODBC_ERR( int iErr ) { m_errno = iErr;
m_iTryCount = 0; };

                                CTPCC_ODBC_ERR( int iErr, int iTryCount ) { m_errno =
iErr; m_iTryCount = iTryCount; };

                                int                             m_errno;
                                int                             m_iTryCount;

                                int ErrorType() {return ERR_TYPE_TPCC_ODBC;};
                                int ErrorNum() {return m_errno;};
                                char *ErrorText();
};

class DllDecl CTPCC_ODBC : public CTPCC_BASE
{
                private:
                                // declare variables and private functions here...
                                BOOL                                    m_bDeadlock;
                // transaction was selected as deadlock victim
                                int                                             m_MaxRetries;
                // retry count on deadlock

                                SQLHENV                         m_henv;
                                // ODBC environment handle
                                SQLHDBC                                 m_hdbc;
                                SQLHSTMT        m_hstmt;
                // the current hstmt

                                SQLHSTMT        m_hstmtNewOrd er;
                                SQLHSTMT        m_hstmtPayment;
                                SQLHSTMT        m_hstmtDelivery;
                                SQLHSTMT        m_hstmtOrderStatus;
                                SQLHSTMT        m_hstmtStockLevel;

                                SQLHDESC        m_descNewOrderCols1;
                                SQLHDESC        m_descNewOrderCols2;
                                SQLHDESC        m_descOrderStatusCols1;
                                SQLHDESC        m_descOrderStatusCols2;

                                // new-order specific fields
                                SQLUINTEGER     m_BindOffset;
                                SQLUINTEGER     m_RowsFetched;
                                int
                m_no_commit_flag;

                                void ThrowError( CODBCERR::ACTION eAction );

                                void InitNewOrderParams();
                                void InitPaymentParams();
                                void InitDeliveryParams();
                                void InitStockLevelParams();
                                void InitOrderStatusParams();

                                union
                                {
                                                NEW_ORDER_DATA
                NewOrder;
                                                PAYMENT_DATA                    Payment;
                                                DELIVERY_DATA                   Delivery;
                                                STOCK_LEVEL_DATA                StockLevel;
                                                ORDER_STATUS_DATA               OrderStatus;
                                } m_txn;

                public:
                                CTPCC_ODBC( LPCSTR szServer, LPCSTR szUser, LPCSTR
szPassword, LPCSTR szHost, LPCSTR szDatabase);
                                ~CTPCC_ODBC(void);

                                inline PNEW_ORDER_DATA
                BuffAddr_NewOrder()                             { return
&m_txn.NewOrder;    };
                                inline PPAYMENT_DATA
                BuffAddr_Payment()                              { return
&m_txn.Payment;     };
                                inline PDELIVERY_DATA
                BuffAddr_Delivery()                             { return
&m_txn.Delivery;    };
                                inline PSTOCK_LEVEL_DATA        BuffAddr_StockLevel()
                { return &m_txn.StockLevel;  };
                                inline PORDER_STATUS_DATA       BuffAddr_OrderStatus()
                { return &m_txn.OrderStatus; };

                                void NewOrder                   ();
                                void Payment                    ();
                                void Delivery                   ();
                                void StockLevel                                 ();
                                void OrderStatus                ();

};


// wrapper routine for class constructor
extern "C" DllDecl CTPCC_ODBC* CTPCC_ODBC_new
                ( LPCSTR szServer, LPCSTR szUser, LPCSTR szPassword, LPCSTR    szHost,
LPCSTR szDatabase );

typedef CTPCC_ODBC* (TYPE_CTPCC_ODBC)(LPCSTR, LPCSTR, LPCSTR, LPCSTR, LPCSTR);
```

install/install.dsp

```
# Microsoft Developer Studio Project File   - Name="install"  - Package Owner=<4>
# Microsoft Developer Studio Generated Build Fi  le, Format Version 6.00
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Application" 0x0101

CFG=install  - Win32 Release
!MESSAGE This is not a valid makefile. To build this project using NMAKE,
!MESSAGE use the Export Makefile command and run
!MESSAGE
!MESSAGE NMAKE /f "install.mak".
!MESSAGE
!MESSAGE You can specify a configuration when running NMAKE
!MESSAGE by defining the macro CFG on the command line. For example:
!MESSAGE
```

```
!MESSAGE NMAKE /f "install.mak" CFG="install - Win32 Release"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "install - Win32 Release" (based on "Win32 (x86) Application")
!MESSAGE "install - Win32 Debug" (based on "Win32 (x86) Application")
!MESSAGE

# Begin Project
# PROP AllowPerConfigDependencies 0
# PROP Scc_ProjName ""
# PROP Scc_LocalPath ""
CPP=cl.exe
MTL=midl.exe
RSC=rc.exe

!IF "$(CFG)" == "install - Win32 Release"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir ". \Release"
# PROP BASE Intermediate_Dir ". \Release"
# PROP BASE Target_Dir "."
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir "."
# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS"    /YX /c
# ADD CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /FD /c
# ADD BASE MTL /nologo /D "NDEBUG" /win32
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /win32
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /  machine:I386
# ADD LINK32 version.lib comctl32.lib kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib

oleaut32.lib uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:windows
/machine:I386 /out:".. \bin\install.exe"

!ELSEIF "$(CFG)" == "install - Win32 Debug"

# 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
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir "."
# ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS"
/YX /c
# ADD CPP /nologo /W3 /Gm /GX /ZI /Od /D "WIN32" /D "_DEBUG" /D "    _WINDOWS" /YX
/FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /debug /machine:I386
# ADD LINK32 version.lib comctl32.lib kernel  32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib

oleaut32.lib uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:windows /debug
/machine:I386 /out:".. \bin\install.exe"

!ENDIF

# Begin Target

# Name "install - Win32 Release"
# Name "install - Win32 Debug"
# Begin Group "Source Files"

# PROP Default_Filter "cpp;c;cxx;rc;def;r;odl;hpj;bat;for;f90"
# Begin Source File

SOURCE=. \src\install.c
# End Source File
# Begin Source File

SOURCE=. \src\install.rc
# ADD BASE RSC /l 0x409 /i "src"
# ADD RSC /l 0x409 /i "src" /i ".. \src"
# End Source File
# Begin Source File

SOURCE=. \src\install_com.cpp
# End Source File
# End Group
# Begin Group "Header Files"

# PROP Default_Filter "h;hpp;hxx;hm;inl;fi;fd"
# End Group
# Begin Group "Resource Files"

# PROP Default_Filter "ico;cur;bmp;dlg;rc2;rct;bin;cnt;rtf;gif;jpg;jpeg;jpe"
# Begin Source File

SOURCE=. \SRC\ICON1.ICO
# End Source File
# Begin Source File

SOURCE=. \SRC\ICON2.ICO
# End Source File
# End Group
# Begin Source File e

SOURCE=. \SRC\LICENSE.TXT
# End Source File
# Begin Source File

SOURCE=. . \isapi_dll \bin\tpcc.dll
# End Source File
# Begin Source File

SOURCE=. . \tm_com_dll \bin\tpcc_com.dll
# End Source File
# Begin Source File

SOURCE=. . \tpcc_com_all \bin\tpcc_com_all. dll
# End Source File
# Begin Source File

SOURCE=. . \tpcc_com_ps \bin\tpcc_com_ps.dll
# End Source File
# Begin Source File

SOURCE=. . \db_dblib_dll \bin\tpcc_dblib.dll
# End Source File
# Begin Source File

SOURCE=. . \db_odbc_dll \bin\tpcc_odbc.dll
# End Source File
# Begin Source File

SOURCE=. . \tm_tuxedo_dll \bin\tpcc_tuxedo.dll
# End Source File
# Begin Source File

SOURCE=. . \tuxapp \bin\tuxapp.exe
# End Source File
# End Target
# End Project
```

install/src/install.c

```
/*          FILE:                       INSTALL.C
 *                                                      Microsoft TPC -C Kit Ver.
4.20.000
 *                                                      Copyright Microsoft, 1999
 *            All Rights Reserved
 *
 *                                                      not audited
 *
 *          PURPOSE:    Automated installation application for TPC  -C Web Kit
 *          Contact:    Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                      4.20.000 - added COM installation steps
 */

#include <windows.h>
#include <direct.h>
#include <io.h>
#include <stdlib.h>
#include <stdio.h>
#include <commctrl.h>
#include ". . \. . \common \src\ReadRegistry.h"

#include "resource.h"

#define     WM_INITTEXT                 WM_USER+100

HICON                   hIcon;
HINSTANCE   hInst;

DWORD                                   versionExeMS;
DWORD                                   versionExeLS;
DWORD                                   versionExeMM;
DWORD                                   versionDllMS;
DWORD                                   versionDllLS;

// TPC-C registry settings
TPCCREGISTRYDATA            Reg;

static      int                         iPoolThreadLimit;
static      int                         iThreadTimeout;
static      int                         iListenBackLog;
static      int                         iAcceptExOutstanding;

static      int                         iMaxPhysicalMemory;
            //max physical memory in MB
static      char        szLastFileName[64];                     // last file
we worked on (for error reporting)

BOOL        CALLBACK    LicenseDlgProc(HWND hwnd, UINT uMsg, W  PARAM wParam,
LPARAM lParam);
BOOL        CALLBACK    UpdatedDlgProc(HWND hwnd, UINT uMsg, WPARAM wParam,
LPARAM lParam);
BOOL        CALLBACK    MainDlgProc(HWND hwnd, UINT uMsg, WPARAM wParam,
LPARAM lParam);
BOOL        CALLBACK    CopyDlgProc(HWND hwnd, UINT uMsg, WPARAM wParam,
LPARAM lParam);
static      void                        ProcessOK(HWND hwnd, char *szDllPath);
static      void                        ReadRegistrySettings(void);
static      void                        WriteRegistrySettings(char *szDllPath);
static      BOOL                        RegisterDLL(char *szFileName);
static      int                                 CopyFiles(HWND hDlg, char
*szDllPath);
static      BOOL                        GetInstallPath(char *szDllPath);
static      void                        GetVersionInfo(char *szDLLPath, char
*szExePath);
static      BOOL                        CheckWWWebService(void);
static      BOOL                        StartWWWebService(void);
static      BOOL                        StopWWWebService(void);
static      void                        UpdateDialog(HWND hDl g);

BOOL install_com(char *szDllPath);

#include ". . \. . \common \src\ReadRegistry.cpp"

int WINAPI WinMain( HINSTANCE hInstance, HINSTANCE hPrevInstance, LPSTR lpCmdLine,
int nCmdShow )
{
            int iRc;

            hInst = hInstance;

            InitCommonControls();

            hIcon = Load Icon(hInstance, MAKEINTRESOURCE(IDI_ICON1));

            iRc = DialogBox(hInstance, MAKEINTRESOURCE(IDD_DIALOG4),
GetDesktopWindow(), LicenseDlgProc);
            if ( iRc )
            {
                        iRc = DialogBox(hInstance,
MAKEINTRESOURCE(IDD_DIALOG1), GetDesktopWindow(), MainDlgProc);
                        if ( iRc )
                        {
                                    DialogBoxParam(hInstance,
MAKEINTRESOURCE(IDD_DIALOG2), GetDesktopWindow(), UpdatedDlgProc, (LPARAM)iRc);
                        }
            }

            DestroyIcon(hIcon);
            return 0;
}

BOOL CALLBACK LicenseDlgProc(HWND hwnd, UINT uMsg, WPARAM wParam, LPARAM lParam)
{
            HGLOBAL                                 hRes;
            HRSRC                                   hResInfo;
            BYTE                                    *pSrc, *pDst;
            DWORD                                   dwSize;
            static HFONT  hFont;

            switch(uMsg)
            {
                        case WM_INITDIALOG:
                                    hFont = CreateFont( -12, 0, 0, 0, 400, 0,
0, 0, 0, 0, 0, 0, 0, "Arial");
                                    SendMessage( GetDlgItem(hwnd,
IDR_LICENSE1), WM_SETFO NT, (WPARAM)hFont, MAKELPARAM(0, 0) );
                                    PostMessage(hwnd, WM_INITTEXT, (WPARAM)0,
(LPARAM)0);
                                    return TRUE;
                        case WM_INITTEXT:
                                    hResInfo = FindResource(hInst,
MAKEINTRESOURCE(IDR_LICENSE1), "LICENSE");
                                    dwSize = SizeofResource(hInst,
hResInfo);
                                    hRes = LoadResource(hInst, hResInfo );
                                    pSrc = (BYTE *)LockResource(hRes);
                                    pDst = (unsigned char
*)malloc(dwSize+1);
                                    if ( pDst )
                                    {
                                                memcpy(pDst, pSrc, dwSize);
                                                pDst[dwSize] = 0;
                                                SetDlgItemText(hwnd,
IDC_LICENSE, (const char *)pDst);
                                                free(pDst);
                                    }
                                    else
                                                SetDlgItemText(hwnd,
IDC_LICENSE, (const char *)pSrc);
                                    return TRUE;
                        case WM_DESTROY:
                                    DeleteObject(hFont);
                                    return TRUE;
                        case WM_COMMAND:
                                    if ( wParam == IDOK )
                                                EndDialog(hwnd, TRUE);
                                    if ( wParam == IDCA NCEL )
                                                EndDialog(hwnd, FALSE);
                        default:
                                    break;
            }
            return FALSE;
}

BOOL CALLBACK UpdatedDlgProc(HWND hwnd, UINT uMsg, WPARAM wParam, LPARAM lParam)
{
            switch(uMsg)
```

```
{
                case WM_INITDIALOG:
                        switch(lParam)
                        {
                                case 1:
                                case 2:

SetDlgItemText(hwnd, IDC_RESULTS, "TPC -C Web Client Installed");
                                                        break;
                        }
                        return TRUE;
                case WM_COMMAND:
                        if ( wParam == IDOK )
                                EndDialog(hwnd, TRUE);
                        break;
                default:
                        break;
        }
        return FALSE;
}

BOOL CALLBACK MainDlgProc(HWND hwnd, UIN T uMsg, WPARAM wParam, LPARAM lParam)
{
        PAINTSTRUCT             ps;
        MEMORYSTATUS  memoryStatus;
        OSVERSIONINFO VI;
        char                    szTmp[256];
        static char             szDllPath[256];
        static char             szExePath[256];

        switch(uMsg)
        {
                case WM_INITDIALOG:
                        GlobalMemoryStatus(&memorySt atus);
                        iMaxPhysicalMemory          =
(memoryStatus.dwTotalPhys/ 1048576);

                        if ( GetInstallPath(szDllPath) )
                        {
                                MessageBox(hwnd, "Error
internet service inetsrv is not installed.", NULL, MB_ICONSTOP | MB_OK);
                                EndDialog(hwnd, FALSE);
                                return TRUE;
                        }

                        // set default values
                        ZeroMemory( &Reg, sizeof(Reg) );
                        Reg.dwNumberOfDeliveryThreads = 4;
                        Reg.dwMaxConnections = 100;
                        Reg.dwMaxPendingDeliveries  = 100;
                        Reg.eDB_Protocol = DBLIB;
                        Reg.eTxnMon = None;
                        strcpy(Reg.szDbServer,
        "");
                        strcpy(Reg.szDbName,
        "tpcc");
                        strcpy(Reg.szDbUser,
        "sa");
                        strcpy(Reg.szDbPassword,    "");

                        iPoolThreadLimit =  iMaxPhysicalMemory *
2;

                        iThreadTimeout = 86400;
                        iListenBackLog = 15;
                        iAcceptExOutstanding = 40;

                        ReadTPCCRegistrySetting s( &Reg );
                        ReadRegistrySettings();

                        GetModuleFileName(hInst, szExePath,
sizeof(szExePath));
                        GetVersionInfo(szDllPath, szExePath);
                       wsprintf(szTmp, "Version %d.%2.2d.%3.3d",
versionExeMS, versionExeMM, versionExeLS);
                        SetDlgItemText(hwnd, IDC_ VERSION,
szTmp);
                        SetDlgItemText(hwnd, IDC_PATH,
szDllPath);
                        SetDlgItemText(hwnd, ED_DB_SERVER,
Reg.szDbServer);
                        SetDlgItemText(hwnd, ED_DB_USER_ID,
Reg.szDbUser);
                        SetDlgItemText(hwnd, ED_DB_PASSWORD,
Reg.szDbPassword);
                        SetDlgItemText(hwnd,  ED_DB_NAME,
Reg.szDbName);
                        SetDlgItemInt(hwnd, ED_THREADS,
Reg.dwNumberOfDeliveryThreads, FALSE);
                        SetDlgItemInt(hwnd, ED_MAXCONNECTION,
Reg.dwMaxConnections, FALSE);
                        SetDlgItemInt(hwnd, ED_MAXDELIVERIES,
Reg.dwMaxPendingDeliveries, FALSE);
                        SetDlgItemInt(hwnd,
ED_IIS_MAX_THEAD_POOL_LIMIT, iPoolThreadLimit, FALSE);
                        SetDlgItemInt(hwnd,
ED_IIS_THREAD_TIMEOUT, iThreadTimeout, FALSE);
                        SetDlgItemInt(hwnd,
ED_IIS_LISTEN_BACKLOG, iListenBackLog, FALSE);
                        SetDlgItemInt(hwnd,
ED_WEB_SERVICE_BACKL OG_QUEUE_SIZE, iAcceptExOutstanding, FALSE);

                        CheckDlgButton(hwnd, IDC_DBLIB, 0);
                        CheckDlgButton(hwnd, IDC_ODBC,  0);
                        if ( Reg.eDB_Protocol == DBLIB )
                                CheckDlgButton(hwnd,
IDC_DBLIB, 1);
                        else
                                CheckDlgButton(hwnd,
IDC_ODBC,  1);

                        // check OS version level for COM.  Must
be at least Windows 2000
                        VI.dwOSVersionInfoSize = sizeof(VI);
                        GetVersionEx( &VI );
                        if (VI.dwMajorVersion < 5)
                        {
                                HWND hDlg =
GetDlgItem( hwnd, IDC_TM_MTS );
                                EnableWindow( hDlg, 0 );
                        // disable COM opt ion
                                if (Reg.eTxnMon == COM)
                                        Reg.eTxnMon =
None;
                        }

                        CheckDlgButton(hwnd, IDC_TM_NONE,   0);
                        CheckDlgButton(hwnd, IDC_TM_TUXEDO, 0);
                        CheckDlgButton(hwnd, IDC_TM_MTS,    0);
                        CheckDlgButton(hwnd, IDC_TM_ENCINA,
                0);
                        switch (Reg.eTxnMo n)
                        {
                        case None:
                                CheckDlgButton(hwnd,
IDC_TM_NONE,   1);
                                break;
                        case TUXEDO:
                                CheckDlgButton(hwnd,
IDC_TM_TUXEDO, 1);
                                break;
                        case ENCINA:
                                CheckDlgButton(hwnd,
IDC_TM_ENCINA, 1);
                                break;
                        case COM:
                                CheckDlgButton(hwnd,
IDC_TM_MTS,    1);
                                break;
                        }

                        return TRUE;
                case WM_PAINT:
                        if ( !sIconic(hwnd) )
                        {
                                BeginPaint(hwnd, &ps);
                                DrawIcon(ps.hdc, 0, 0,
hIcon);
                                EndPaint(hwnd, &ps);
                                return TRUE;
                        }
                        break;
                case WM_COMMAND:
                        if ( HIWORD(wParam ) == BN_CLICKED )
                        {
                                switch( LOWORD(wParam) )
                                {
                                        case
IDC_DBLIB:
                                return TRUE;
                                        case
IDC_ODBC:
                                return TRUE;
                                        case IDOK:
                                ProcessOK(hwnd, szDllPath);
                                return TRUE;
                                        case
IDCANCEL:
                                EndDialog(hwnd, FALSE);
                                return TRUE;
                                        default:
                                return FALSE;
                                }
                        }
                        break;
                default:
                        break;
        }
        return FALSE;
}

static void ProcessOK(HWND hwnd, char *szDllPath)
{
        int             d;
        HWND            hDlg;
        int             rc;

        char            szFullName[256];
        char            szErrTxt[128];

        // read se ttings from dialog
        Reg.dwNumberOfDeliveryThreads  = GetDlgItemInt(hwnd, ED_THREADS, &d,
FALSE);
        Reg.dwMaxConnections = GetDlgItemInt(hwnd, ED_MAXCONNECTION, &d,
FALSE);
        Reg.dwMaxPendingDeliveries = GetDlgItemInt(hwnd, ED_MAXDELIVERIES,
&d, FALSE);

        GetDlgItemText(hwnd, ED_DB_SERVER, Reg.szDbServer,
sizeof(Reg.szDbServer));
        GetDlgItemText(hwnd, ED_DB_USER_ID, Reg.szDbUser,
sizeof(Reg.szDbUser));
        GetDlgItemText(hwnd, ED_DB_PASSWORD, Reg.szDbPassword,
sizeof(Reg.szDbPassword));
        GetDlgItemText(hwnd, ED_D B_NAME, Reg.szDbName,
sizeof(Reg.szDbName));

        if ( IsDlgButtonChecked(hwnd, IDC_DBLIB) )
        {
                Reg.eDB_Protocol = DBLIB;
                rc = 1;
        }
        else if ( IsDlgButtonChecked(hwnd, IDC_ODBC) )
        {
                Reg.eDB_Protocol = ODBC;
                rc = 2;
        }

        if ( IsDlgButtonChecked(hwnd,   IDC_TM_NONE) )
                Reg.eTxnMon = None;
        else if ( IsDlgButtonChecked(hwnd, IDC_TM_TUXEDO) )
                Reg.eTxnMon = TUXEDO;
        else if ( IsDlgButtonChecked(hwnd, IDC_TM_MTS) )
                Reg.eTxnMon = COM;
        else if ( IsDlgButtonChecked(hwnd, IDC_TM_ENCINA) )
                Reg.eTxnMon = E NCINA;

        iPoolThreadLimit = GetDlgItemInt(hwnd, ED_IIS_MAX_THEAD_POOL_LIMIT,
&d, FALSE);
        iThreadTimeout = GetDlgItemInt(hwnd, ED_IIS_THREAD_TIMEOUT,
        &d, FALSE);
        iListenBackLog = GetDlgItemInt(hwnd, ED_IIS_LISTEN_BACKLOG, &d,
FALSE);
        iAcceptExOutstanding  = GetDlgItemInt(hwnd,
ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE, &d, FALSE);


        ShowWindow(hwnd, SW_HIDE);
        hDlg = CreateDialog(hInst, MAKEINTRESOURCE(IDD_DIALOG3), hwnd,
CopyDlgProc);
        ShowWindow(hDlg, SW_SHOWNA);
        UpdateDialog(hDlg);


        // write binaries to ine tpub\wwwroot
        rc = CopyFiles(hDlg, szDllPath);
        if ( !rc )
        {
                ShowWindow(hwnd, SW_SHOWNA);
                DestroyWindow(hDlg);
                strcpy( szErrTxt, "Error(s) occured when creating " );
                strcat( szErrTxt, szLastFileName );
                MessageBox(hwnd, szErrTxt, NULL, MB_ICONSTO  P | MB_OK);
                EndDialog(hwnd, 0);
                return;
        }

        // update registry
        SetDlgItemText(hDlg, IDC_STATUS, "Updating Registry.");
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);
        WriteRegistrySettings(szDllPath);

        // register  com proxy stub
        strcpy(szFullName, szDllPath);
        strcat(szFullName, "tpcc_com_ps.dll");
        if (!RegisterDLL(szFullName))
        {
                ShowWindow(hwnd, SW_SHOWNA);
                DestroyWindow(hDlg);
                strcpy( szErrTxt, "Error occured when registering " );
                strcat( szErrTxt, szFu llName );
                MessageBox(hwnd, szErrTxt, NULL, MB_ICONSTOP | MB_OK);
                EndDialog(hwnd, 0);
                return;
        }

        // if using COM
        if (Reg.eTxnMon == COM)
        {
                SetDlgItemText(hDlg, IDC_STATUS, "Configuring COM.");
                SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT  , 0,
0);
                UpdateDialog(hDlg);

                if (install_com(szDllPath))
                {
                        ShowWindow(hwnd, SW_SHOWNA);
                        DestroyWindow(hDlg);
                        strcpy( szErrTxt, "Error occured when
configuring COM settings." );
                        MessageBox(hwnd, szErrTxt, NULL,
MB_ICONSTOP | MB_OK);
                        EndDialog(hwnd, 0);
                        return;
                }
        }

        Sleep(100);

        ShowWindow(hwnd, SW_SHOWNA);
        DestroyWindow(hDlg);

        EndDialog(hwnd, rc);
        return;
}

static void ReadRegistrySettings(void)
{
        HKEY            hKey;
```

```
        DWORD           size;
        DWORD           type;

        if ( RegOpenKeyEx(HKEY_LOCAL_MACHINE  ,
"SYSTEM\\CurrentControlSet \\Services\\lnetinfo\\Parameters", 0, KEY_READ, &hKey)
== ERROR_SUCCESS

)
        {
                size = sizeof(iPoolThreadLimit);
                if ( RegQueryValueEx(hKey, "PoolThreadLimit", 0, &type,
(char *)&iPoolThreadLimit, &size) == ERROR_SUCCESS )
                        if ( !iPoolThreadLimit )
                                iPoolThreadLimit =
iMaxPhysicalMemory * 2;

                size = sizeof(iThreadTimeout);
                if ( RegQueryValueEx(hKey, "ThreadTimeout", 0, &type,
(char *)&iThreadTimeout, &size) == ERROR_SUCCESS )
                        if ( !iThreadTimeout )
                                iThreadTimeo ut = 86400;

                size = sizeof(iListenBackLog);
                if ( RegQueryValueEx(hKey, "ListenBackLog", 0, &type,
(char *)&iListenBackLog, &size) == ERROR_SUCCESS )
                        if ( !iListenBackLog )
                                iListenBackLog = 15;

                RegCloseKey(hKey);
        }

        if ( RegOpenKeyEx(HKEY_LO CAL_MACHINE,
"SYSTEM\\CurrentControlSet \\Services\\W3SVC\\Parameters", 0, KEY_READ, &hKey) ==
ERROR_SUCCESS )
        {
                size = sizeof(iAcceptExOutstanding);
                if ( RegQueryValueEx(hKey, "AcceptExOutstanding", 0,
&type, (char *)&iAcceptExOutstanding, &size) == E  RROR_SUCCESS )
                        if ( !iAcceptExOutstanding )
                                iAcceptExOutstanding = 40;

                RegCloseKey(hKey);
        }
}

static void WriteRegistrySettings(char *szDllPath)
{
        HKEY            hKey;
        DWORD           dwDisposition;
        char            szTmp[256];
        char            *ptr;
        int                     iRc;

        if ( RegCreateKeyE x(HKEY_LOCAL_MACHINE, "SOFTWARE  \\Microsoft \\TPCC",
0, NULL, REG_OPTION_NON_VOLATILE, KEY_ALL_ACCESS, NULL, &hKey,

&dwDisposition) == ERROR_SUCCESS )
        {
                strcpy(szTmp, szDllPath);
                ptr = strstr(szTmp, "tpcc");
                if ( ptr )
                        *ptr = 0;

                RegSetValueEx( hKey, "Path", 0, REG_SZ, szTmp,
strlen(szTmp)+1);

                RegSetValueEx(hKey, "NumberOfDeliveryThreads", 0,
REG_DWORD, (char *)&Reg.dwNumberOfDeliveryThreads,

sizeof(Reg.dwNumberOfDeliveryThreads));
                RegSetValueEx(hKey, "MaxConnections", 0, REG_DWORD,
(char *)&Reg.dwMaxConnections, sizeof(Reg.dwMaxConnections));
                RegSetValueEx(hKey, "MaxPendingDeliveries", 0,
REG_DWORD, (char *)&Reg.dwMaxPendingDeliveries,

sizeof(Reg.dwMaxPendingDeliveries));

                RegSetValueEx(hKey, "DB_Protocol", 0, REG_SZ,
szDBNames[Reg.e DB_Protocol], strlen(szDBNames[Reg.eDB_Protocol])+1);
                RegSetValueEx(hKey, "TxnMonitor", 0, REG_SZ,
szTxnMonNames[Reg.eTxnMon], strlen(szTxnMonNames[Reg.eTxnMon])+1);

                RegSetValueEx(hKey, "DbServer", 0, REG_SZ,
Reg.szDbServer, strlen(Reg.szDbServer)+1);
                RegSetValueEx(hKey, "DbName", 0, REG_SZ, Reg.szDbName,
strlen(Reg.szDbName)+1);
                RegSetValueEx(hKey, "DbUser", 0, REG_SZ, Reg.szDbUser,
strlen(Reg.szDbUser)+1);
                RegSetValueEx(hKey, "DbPassword", 0, REG_SZ,
Reg.szDbPassword, strlen(Reg.szDbPassword)+1  );

                strcpy(szTmp, "YES");
                RegSetValueEx(hKey, "COM_SinglePool", 0, REG_SZ, szTmp,
strlen(szTmp)+1);

                RegFlushKey(hKey);
                RegCloseKey(hKey);
        }

        if ( (iRc=RegCreateKeyEx(HKEY_LOCAL_MACHINE,
"SYSTEM\\CurrentControlSet \\Services\\lnetinfo\\Parameters" , 0, NULL,

REG_OPTION_NON_VOLATILE, KEY_ALL_ACCESS, NULL, &hKey, &dwDisposition)) ==
ERROR_SUCCESS )
        {
                RegSetValueEx(hKey, "PoolThreadLimit", 0, REG_DWORD,
(char *)&iPoolThreadLimit, sizeof(iPoolThreadLimit));
                RegSetValueEx(hKey, "ThreadTimeout", 0,   REG_DWORD,
(char *)&iThreadTimeout, sizeof(iThreadTimeout));
                RegSetValueEx(hKey, "ListenBackLog", 0, REG_DWORD,
(char *)&iListenBackLog, sizeof(iListenBackLog));

                RegFlushKey(hKey);
                RegCloseKey(hKey);
        }

        if ( (iRc=RegCreateKeyEx(HKEY_LOCAL_MACHINE  ,
"SYSTEM\\CurrentControlSet \\Services\\W3SVC\\Parameters", 0, NULL,

REG_OPTION_NON_VOLATILE, KEY_ALL_ACCESS, NULL, &hKey, &dwDisposition)) ==
ERROR_SUCCESS )
                {
                RegSetValueEx(hKey, "AcceptExOutstanding", 0,
REG_DWORD, (char *)&iAcceptExOutstanding, si  zeof(iAcceptExOutstanding));

                RegFlushKey(hKey);
                RegCloseKey(hKey);
        }

        return;
}

BOOL CALLBACK CopyDlgProc(HWND hwnd, UINT uMsg, WPARAM wParam, LPARAM lParam)
{
        if ( uMsg == WM_INITDIALOG )
        {
                SendDlgItemMessage(hwnd, IDC_PROGRESS1, PBM_SETRANGE,
0, MAKELPARAM(0, 16));
                SendDlgItemMessage(hwnd, IDC_PROGRESS1, PBM_SETSTEP,
(WPARAM)1, 0);
                return TRUE;
        }
        return FALSE;
}

BOOL RegisterDLL(char *szFileName)
{
        HINSTANCE       hLib;
        FARPROC                 lpDllEntryPoint;

        hLib = LoadLibrary(szFileName);
        if ( hLib == NULL )
                return FALSE;
        // Find the entry point.
        lpDllEntryPoint = GetProcAddress(hLib, "DllRegisterServer");
        if (lpDllEntryPoint != NULL)
        {
                return ((*lpDllEntryPoint)() == S_OK);
        }
        else
                return FALSE;  //unable to locate entry point
}

BOOL File FromResource( char *szResourceName, int iResourceId, char *szDllPath,
char *szFileName )
{
        HGLOBAL                                 hDLL;
        HRSRC                                   hResInfo;
        HANDLE                                  hFile;
        DWORD                                   dwSize;
        BYTE                                    *pSrc;
        DWORD                                   d;
        char                                    szFullName[256];

        hResInfo = FindResource(hInst, MAKEINTRES  OURCE(iResourceId),
szResourceName);

        strcpy(szFullName, szDllPath);
        strcat(szFullName, szFileName);

        dwSize = SizeofResource(hInst, hResInfo);
        hDLL = LoadResource(hInst, hResInfo );
        pSrc = (BYTE *)LockResource(hDLL);
        remove(szFullName);

        if ( !(hFile = CreateFile(szFullName, GENERIC_WRITE, 0, NULL,
CREATE_ALWAYS, FILE_ATTRIBUTE_NORMAL, NULL)) )
                return FALSE;

        if ( !WriteFile(hFile, pSrc, dwSize, &d, NULL) )
                return FALSE;

        CloseHandle(hFile);

        UnlockResource(hDLL);
        FreeResource(hDLL);
        return TRUE;
}

static int CopyFiles(HWND hDlg, char *szDllPath)
{
        BOOL                            bSvcRunning;

        bSvcRunning = CheckWWWebService();
        if ( bSvcRunning )
        {
                SetDlgItemText(hDlg, IDC_STATUS, "Stopping Web
Service.");
                SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT  , 0,
0);
                UpdateDialog(hDlg);

                StopWWWebService();
                SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0,
0);
                UpdateDialog(hDlg);
        }

        SetDlgItemText(hDlg, IDC_STATUS, "Copying Files...");
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0)   ;
        UpdateDialog(hDlg);

        // install TPCC.DLL
        strcpy( szLastFileName, "tpcc.dll" );
        if (!FileFromResource( "TPCCDLL", IDR_TPCCDLL, szDllPath,
szLastFileName ))
                return 0;
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);

        // install tpcc_dblib.dll
        strcpy( szLastFileName, "tpcc_dblib.dll" );
        if (!FileFromResource( "DBLIB_DLL", IDR_DBLIB_DLL, szDllPath,
szLastFileName ))
                return 0;
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);

        // install tpcc_odbc.dll
        strcpy( szLastFileName, "tpcc_odbc.dll" );
        if (!FileFromResource( "ODBC_DLL", IDR_ODBC_DLL, szDllPath,
szLastFileName ))
                return 0;
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);

        // install tuxapp. exe
        strcpy( szLastFileName, "tuxapp.exe" );
        if (!FileFromResource( "TUXEDO_APP", IDR_TUXEDO_APP, szDllPath,
szLastFileName ))
                return 0;
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);

        // install tpcc_tuxedo.dll
        strcpy( szLastFileName, "tpcc_tuxedo.dll" );
        if (!FileFromResource( "TUXEDO_DLL", IDR_TUXEDO_DLL, szDllPath,
szLastFileName ))
                return 0;
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);

        // install tpcc_com.dll
        strcpy( szLastFileName, "tpcc_com.dll" );
        if (!FileFromResource( "COM_DLL", IDR_COM_DLL, szDllPath,
szLastFileName ))
                return 0;
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);

        // install tpcc_com_all.tlb
        strcpy( szLastFileName, "tpcc_com_all.tlb" );
        if (!FileFromResource( "COM_TYPLIB", IDR_COMTYPLIB_DLL, szDllPath,
szLastFileName ))
                return 0;
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);

        // install tpcc_com_ps.dll
        strcpy( szLastFileName, "tpcc_com_ps.dll" );
        if (!FileFromResource( "COM_PS_DLL", IDR_COMPS_DLL, szDllPath,
szLastFileName ))
                return 0;
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);

        // install tpcc_com_all.dll
        strcpy( szLastFileName, "tp cc_com_all.dll" );
        if (!FileFromResource( "COM_ALL_DLL", IDR_COMALL_DLL, szDllPath,
szLastFileName ))
                return 0;
        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);

        //if we stopped service restart it.
        if ( bSvcRunning )
        {
                SetDlgItemText(hDlg, IDC_STATUS, "Starting Web
Service.");
                SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0,
0);
                UpdateDialog(hDlg);
                StartWWWebService();
        }

        SendDlgItemMessage(hDlg, IDC_PROGRESS1, PBM_STEPIT, 0, 0);
        UpdateDialog(hDlg);

        return 1;
}

static BOOL GetInstallPath(char *szDllPath)
{
    HKEY        hKey;
        BYTE            szData[256];
        DWORD           sv;
        BOOL            bRc;
        int                             len;
        int                             iRc;


        // Registry key
HKEY_LOCAL_MACHINE \SOFTWARE\Microsoft\lnetStp\PathWWWRoot is used to find the
        // IIS default web  site directory and determine that IIS is
installed.

        szDllPath[0] =  0;
        bRc = TRUE;
        if ( RegOpenKeyEx(HKEY_LOCAL_MACHINE, "SOFTWARE  \\Microsoft \\lnetStp",
0, KEY_ALL_ACCESS, &hKey) == ERROR_SUCCESS )
```

```
        {
                sv = sizeof(szData);
                iRc = RegQueryValueEx( hK ey, "PathWWWRoot", NULL, NULL,
szData, &sv );  // used by IIS 5.0 & 6.0
                if (iRc == ERROR_SUCCESS)
                {
                        bRc = FALSE;
                        strcpy(szDllPath, szData);
                        len = strlen(szDllPath);
                        if ( szDllPath[len -1] != '\\' )
                        {
                                szDllPath[len] = '\\';
                                szDllPath[len+1] = 0;
                        }
                }

                RegCloseKey(hKey);
        }

        return bRc;
}

static void GetVersionInfo(char *szDLLPath, char *szExePath)
{
        DWORD                                           d;
        DWORD                                           dwSize;
        DWORD                                           dwBytes;
        char                                            *ptr;
        VS_FIXEDFILEINFO        *vs;

        versionDllMS = 0;
        versionDllLS = 0;
        if ( _access(szDLLPath, 00) == 0 )
        {
                dwSize = GetFileVersionInfoSize(szDLLPath, &d);
                if ( dwSize )
                {
                        ptr = (char *)malloc(dwSize);
                        GetFileVersionInfo(szDLLPath, 0, dwSize,
ptr);
                        VerQueryValue(ptr, " \\",&vs, &dwBytes);
                        versionDllMS = vs ->dwProductVersionMS;
                        versionDllLS = vs ->dwProductVersionLS;
                        free(ptr);
                }
        }

        versionExeMS = 0x7FFF;
        versionExeLS = 0x7FFF;
        dwSize = GetFileVersionInfoSize(szExePath, &d);
        if ( dwSize )
        {
                ptr = (char *)malloc(dwSize);
                GetFileVersionInfo(sz ExePath, 0, dwSize, ptr);
                VerQueryValue(ptr, " \\",&vs, &dwBytes);

                versionExeMS = vs ->dwProductVersionMS;
                versionExeLS = LOWORD(vs ->dwProductVersionLS);
                versionExeMM = HIWORD(vs ->dwProductVersionLS);
                free(ptr);
        }
        return;
}

static BOOL CheckWW WebService(void)
{
        SC_HANDLE               schSCManager;
        SC_HANDLE               schService;
        SERVICE_STATUS          ssStatus;

        schSCManager = OpenSCManager(NULL, NULL, SC_MANAGER_ALL_ACCESS);
        schService = OpenService(schSCManager, TEXT("W3SVC"),
SERVICE_ALL_ACCESS);
        if (schService = = NULL)
                return FALSE;

        if (! QueryServiceStatus(schService, &ssStatus) )
                goto ServiceNotRunning;

        if ( !ControlService(schService, SERVICE_CONTROL_STOP, &ssStatus) )
                goto ServiceNotRunning;
        //start Service pending, Check the status until the serv  ice is
running.
        if (! QueryServiceStatus(schService, &ssStatus) )
                goto ServiceNotRunning;

        CloseServiceHandle(schService);
        return TRUE;

ServiceNotRunning:

        CloseServiceHandle(schService);
        return FALSE;
}

static BOOL StartWWWebService(void)
{
        SC_HANDLE               schSCManager;
        SC_HANDLE               schService;
        SERVICE_STATUS          ssStatus;
        DWORD                                   dwOldCheckPoint;

        schSCManager = OpenSCManager(NULL, NULL, SC_MANAGER_ALL_ACCESS);
        schService = OpenService(schSCManager, TEXT("W3SVC"),
SERVICE_ALL_ACCESS);
        if (schService  == NULL)
                return FALSE;

        if (! StartService(schService, 0, NULL) )
                goto StartWWWebErr;

        //start Service pending, Check the status until the service is
running.
        if (! QueryServiceStatus(schService, &ssStatus) )
                goto StartWWWebErr;
        while( ssStatus. dwCurrentState != SERVICE_RUNNING)
        {

                dwOldCheckPoint = ssStatus.dwCheckPoint;
        //Save the current checkpoint.
                Sleep(ssStatus.dwWaitHint);
                                                //Wait for the specified
interval.
                if ( !QueryServiceStatus(schService, &ssStatus) )
        //Check the sta tus again.
                        break;
                if (dwOldCheckPoint >= ssStatus.dwCheckPoint)
        //Break if the checkpoint has not been incremented.
                        break;
        }

        if (ssStatus.dwCurrentState == SERVICE_RUNNING)
                goto StartWWWebErr;

        CloseServiceHandle(schService);
        return TRUE;

StartWWWebErr:
        CloseServiceHandle(schService);
        return FALSE;
}

static BOOL StopWWWebService(void)
{
        SC_HANDLE               schSCManager;
        SC_HANDLE               schService;
        SERVICE_STATUS          ssStatus;
        DWORD                                   dwOldCheckPoint;

        schSCManager = OpenSCManager(NULL, NULL, SC_MANA  GER_ALL_ACCESS);
        schService = OpenService(schSCManager, TEXT("W3SVC"),
SERVICE_ALL_ACCESS);
        if (schService == NULL)
                return FALSE;

        if (! QueryServiceStatus(schService, &ssStatus) )
                goto StopWWWebErr;

        if ( !ControlService(schService, SERVICE_CONTR  OL_STOP, &ssStatus) )
                goto StopWWWebErr;
        //start Service pending, Check the status until the service is
running.
        if (! QueryServiceStatus(schService, &ssStatus) )
                goto StopWWWebErr;
        while( ssStatus.dwCurrentState == SERVICE_RUNNING)
        {

                dwOldCheckPoint = ssStatus.dwCheckPoint;
        //Save the current checkpoint.
                Sleep(ssStatus.dwWaitHint);
                                                //Wait for the specified
interval.
                if ( !QueryServiceStatus(schService, &ssStatus) )
        //Check the status again.
                        break;
                if (dwOldCheckPoint >= ssSta tus.dwCheckPoint)
        //Break if the checkpoint has not been incremented.
                        break;
        }

        if (ssStatus.dwCurrentState == SERVICE_RUNNING)
                goto StopWWWebErr;

        CloseServiceHandle(schService);
        return TRUE;

StopWWWebErr:
        CloseServiceHandle(schService);
        return FALSE;
}

static void UpdateDialog(HWND hDlg)
{
        MSG msg;

        UpdateWindow(hDlg);
        while( PeekMessage(&msg, hDlg, 0, 0, PM_REMOVE) )
        {
                TranslateMessage(&msg);
                DispatchMessage(&msg);
        }
        Sleep(250);
        return;
}
```

install/src/install.h

```
//{{NO_DEPENDENCIE S}}
// Microsoft Developer Studio generated include file.
// Used by install.rc
//

#define IDD_DIALOG1                     101
#define IDI_ICON1                       102
#define IDR_TPCCDLL                     103
#define IDD_DIALOG2                     105
#define IDI_ICON2                       106
#define IDR_DELIVERY                    107
#define IDD_DIALOG3                     108

#define BN_LOG                          1001
#define ED_KEEP                         1002
#define ED_THREADS                      1003
#define ED_THREADS2                     1004
#define IDC_PATH                        1007
#define IDC_VERSION                     1009
#define IDC_RESULTS                     1010
#define IDC_PROGRESS1                   1011
#define IDC_STATUS                      1012
#define IDC_BUTTON1                     1013
#define ED_MAXCONNECTION                1014
#define ED_IIS_MAX_THEAD_POOL_LIMIT     1015
#define ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE               1017
#define ED_IIS_THREAD_TIM EOUT          1018
#define ED_IIS_LISTEN_BACKLOG           1019
#define IDC_DBLIB                       1021
#define IDC_ODBC                        1022
#define IDC_CONNECT_POOL
                1023
#define ED_USER_CONNECT_DELAY_TIME                                      1024

// Next default valu es for new objects
//
```

install/src/install.rc

```
//Microsoft Developer Studio generated resource script.
//
#include "resource.h"

#define APSTUDIO_READONLY_SYMBOLS
////////////////////////////////////////////////////////////////////////////
//
// Generated  from the TEXTINCLUDE 2 resource.
//
#include "afxres.h"

////////////////////////////////////////////////////////////////////////////
#undef APSTUDIO_READONLY_SYMBOLS

////////////////////////////////////////////////////////////////////////////
// English (U.S.) resources

#if !defined(AFX_RESOURCE_DLL) || defined(AFX_TARG_ENU)
#ifdef _WIN32
LANGUAGE LANG_ENGLISH, SUBLANG_ENGLISH_US
#pragma code_page(1252)
#endif //_WIN32

////////////////////////////////////////////////////////////////////////////
//
// Dialog
//

IDD_DIALOG1 DIALOGEX 0, 0, 219, 351
STYLE DS_MODALFRAME | DS_CENTER | WS_MINIMIZEBOX | WS_POPUP | WS_CAPTION |
    WS_SYSMENU
CAPTION "TPC-C Web Client Installation Utility"
FONT 8, "MS Sans Serif"
BEGIN
    EDITTEXT        ED_THREADS,164,45,  34,12,ES_RIGHT | ES_NUMBER,
                    WS_EX_RTLREADING
    EDITTEXT        ED_MAXDELIVERIES,164,59,34,12,ES_RIGHT | ES_NUMBER,
                    WS_EX_RTLREADING
    EDITTEXT        ED_MAXCONNECTION,164,73,34,12,ES_RIGHT | ES_NUMBER,
                    WS_EX_RTLREADING
    CONTROL         "None",IDC_TM_NONE,"Button",BS_AUTORADIOBUTTON |
                    WS_GROUP | WS_TABSTOP,43,100,33,10
    CONTROL         "COM",IDC_TM_MTS,"Button",BS_AUTORADIOBUTTON |
                    WS_TABSTOP,43,11  3,32,10
    CONTROL         "TUXEDO",IDC_TM_TUXEDO,"Button",BS_AUTORADIOBUTTON |
                    WS_TABSTOP,106,100,46,10
    CONTROL         "ENCINA",IDC_TM_ENCINA,"Button",BS_AUTORADIOBUTTON |
                    WS_DISABLED | WS_TABSTOP,106,113,43   ,10
    EDITTEXT        ED_DB_SERVER,131,152,67,12,ES_AUTOHSCROLL
    EDITTEXT        ED_DB_USER_ID,131,165,67,12,ES_AUTOHSCROLL
    EDITTEXT        ED_DB_PASSWORD,131,178,67,12,ES_AUTOHSCROLL
    EDITTEXT        ED_DB_NAME,131,191,67,12,ES_AUTOHSCROLL
    CONTROL         "DBLIB",IDC_DBLIB,"Button",BS_AUTORADIOBUTTON | WS_GROUP |
                    WS_TABSTOP,45,219,39,12
    CONTROL         "ODBC",IDC_ODBC,"Button",BS_AUTORADIOBUTTON | WS_TABSTOP,
                    91,219,39,12
    EDITTEXT        ED_I IS_MAX_THEAD_POOL_LIMIT,164,263,34,12,ES_RIGHT |
                    ES_NUMBER,WS_EX_RTLREADING
    EDITTEXT        ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE,164,277,34,12,ES_RIGHT |
                    ES_NUMBER,WS_EX_RTLREADING
    EDITTEXT        ED_IIS_THREA D_TIMEOUT,164,291,34,12,ES_RIGHT | ES_NUMBER,
                    WS_EX_RTLREADING
    EDITTEXT        ED_IIS_LISTEN_BACKLOG,164,305,34,12,ES_RIGHT | ES_NUMBER,
                    WS_EX_RTLREADING
    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
    LTEXT           "Number of Delivery Threads:",IDC_STATIC,35,45,115,12
    LTEXT           "Max Number of Connections:",IDC_STATIC,35,73,115,12
    RTEXT           "Version 4.11",IDC_VERSION,120,4,89,9
    LTEXT           "IIS Max Thread Pool Limit:",IDC_STATIC,36,263,115,12
    LTEXT           "Web Service Backlog Queue Size:",IDC_STATIC,36,277,115,
                    12
    LTEXT           "IIS  Thread Timeout (seconds):",IDC_STATIC,36,291,115,12
    LTEXT           "IIS Listen Backlog:",IDC_STATIC,36,307,115,10
```

```
    GROUPBOX        "Database Interface",IDC_STATIC,35,208,163,27,WS_GROUP
    LTEXT           "Installation directory:",IDC_STATIC,35,29   ,71,10
    GROUPBOX        "Transaction Monitor",IDC_STATIC,33,90,165,37
    LTEXT           "Server Name:",IDC_STATIC,35,155,56,8
    LTEXT           "User ID:",IDC_STATIC,35,168,60,8
    LTEXT           "User Password:",IDC_STATIC,35,181,83,8
    LTEXT           "Database Name:",IDC_STATIC,35,194,54,8
    GROUPBOX        "SQL Server Connection Properties",IDC_STATIC,22,139,187,
                    102
    GROUPBOX        "Web Client Properties",IDC_STATIC,22,15,187,118
    GROUPBOX        "IIS Settings",I  DC_STATIC,22,247,187,79
    LTEXT           "Max Pending Deliveries:",IDC_STATIC,35,59,115,12
END

IDD_DIALOG2 DIALOGEX 0, 0, 117, 62
STYLE DS_SETFOREGROUND | DS_3DLOOK | DS_CENTER | WS_POPUP | WS_BORDER
EXSTYLE WS_EX_STATICEDGE
FONT 12, "MS Sans Serif", 0 , 0, 0x1
BEGIN
    DEFPUSHBUTTON   "OK",IDOK,33,45,50,9
    CTEXT           "HTML TPC  -C Installation Successfull",IDC_RESULTS,7,22,
                    102,18,0,WS_EX_CLIENTEDGE
    ICON            IDI_ICON2,IDC_STATIC,50,7,18,20,SS_REALSIZEIMAGE,
                    WS_EX_TRANSPARENT
END

IDD_DIALOG3 DIALOG DISCARDABLE  0, 0, 91, 40
STYLE DS_SYSMODAL | DS_MODALFRAME | DS_3DLOOK | DS_CENTER | WS_CAPTION
CAPTION "Installing TPC -C Web Client"
FONT 12, "Arial Black"
BEGIN
    CONTROL         "Progress1",IDC_PR  OGRESS1,"msctls_progress32",WS_BORDER,
                    7,20,77,13
    CTEXT           "Static",IDC_STATUS,7,7,77,12,SS_SUNKEN
END

IDD_DIALOG4 DIALOG DISCARDABLE  0, 0, 291, 202
STYLE DS_MODALFRAME | DS_CENTER | WS_POPUP | WS_CAPTION | WS_SYSMENU
CAPTION "Client End User License"
FONT 8, "MS Sans Serif"
BEGIN
    EDITTEXT        IDC_LICENSE,7,7,271,167,ES_MULTILINE | ES_AUTOVSCROLL |
                    ES_AUTOHSCROLL | ES_READONLY | WS_VSCROLL | WS_HSCROLL
    DEFPUSHBUTTON   "I &Agree",IDOK,87,181,50  ,14
    PUSHBUTTON      "&Cancel",IDCANCEL,153,181,50,14
END


/////////////////////////////////////////////////////////////////////////////
//
// DESIGNINFO
//

#ifdef APSTUDIO_INVOKED
GUIDELINES DESIGNINFO DISCARDABLE
BEGIN
    IDD_DIALOG1, DIALOG
    BEGIN
        LEFTMARGIN, 22
        RIGHTMARGIN, 209
        VERTGUIDE, 35
        VERTGUIDE, 198
        TOPMARGIN, 4
        BOTTOMMARGIN, 345
    END

    IDD_DIALOG2, DIALOG
    BEGIN
        LEFTMARGIN, 7
        RIGHTMARGIN, 109
        TOPMARGIN, 7
        BOTTOMMARGIN, 54
    END

    IDD_DIALOG3, DIALOG
    BEGIN
        LEFTMARGIN, 7
        RIGHTMARGIN, 84
        TOPMARGIN, 7
        BOTTOMMARGIN, 33
    END

    IDD_DIALOG4, DIALOG
    BEGIN
        LEFTMARGIN, 7
        RIGHTMARGIN, 278
        TOPMARGIN, 7
        BOTTOMMARGIN, 195
    END
END
#endif    // APSTUDIO_INVOKED


#ifdef APSTUDIO_INVOKED
/////////////////////////////////////////////////////////////////////////////
//
// TEXTINCLUDE
//

1 TEXTINCLUDE DISCARDABLE
BEGIN
    "resource. h\0"
END

2 TEXTINCLUDE DISCARDABLE
BEGIN
    "#include ""afxres.h""  \r\n"
    "\0"
END

3 TEXTINCLUDE DISCARDABLE
BEGIN
    "\r\n"
    "\0"
END

#endif    // APSTUDIO_INVOKED


/////////////////////////////////////////////////////////////////////////////
//
// Icon
//

// Icon with lowest ID value placed first to ensure application icon
// remains consistent on all systems.
IDI_ICON1               ICON    DISCARDABLE     "icon1.ico"
IDI_ICON2               ICON    DISCARDABLE     "icon2.ico"

/////////// /////////////////////////////////////////////////////////////////
//
// TPCCDLL
//

IDR_TPCCDLL             TPCCDLL DISCARDABLE
"..\\..\\isapi_dll\\bin\\tpcc.dll"

#ifndef _MAC
/////////////////////////////////////////////////////////////////////////////   //
//
// Version
//

VS_VERSION_INFO VERSIONINFO
 FILEVERSION 0,4,20,0
 PRODUCTVERSION 0,4,20,0
 FILEFLAGSMASK 0x3fL
#ifdef _DEBUG
 FILEFLAGS 0x1L
#else
 FILEFLAGS 0x0L
#endif
 FILEOS 0x40004L
 FILETYPE 0x1L
 FILESUBTYPE 0x0L
BEGIN
    BLOCK "StringFileInf o"
    BEGIN
        BLOCK "040904b0"
        BEGIN
            VALUE "Comments", "TPC  -C Web Client Installer \0"
            VALUE "CompanyName", "Microsoft  \0"
            VALUE "FileDescription", "install  \0"
            VALUE "FileVersion", "0, 4, 20, 0  \0"
            VALUE "InternalName", "install  \0"
            VALUE "LegalCopyright", "Copyright © 1999  \0"
            VALUE "OriginalFilename", "install.exe  \0"
            VALUE "ProductName", "Microsoft install  \0"
            VALUE "ProductVersion", "0, 4,   20, 0\0"
        END
    END
    BLOCK "VarFileInfo"
    BEGIN
        VALUE "Translation", 0x409, 1200
    END
END

#endif    // !_MAC


/////////////////////////////////////////////////////////////////////////////
//
// LICENSE
//

IDR_LICENSE1            LICENSE DISCARDABLE     "license.txt"

/////////////////////////////////////////////////////////////////////////////
//
// DBLIB_DLL
//

IDR_DBLIB_DLL           DBLIB_DLL DISCARDABLE
"..\\..\\db_dblib_dll\\bin\\tpcc_dblib.dll"

////////////////////// ////////////////////////////////////////////////////////
//
// ODBC_DLL
//

IDR_ODBC_DLL            ODBC_DLL DISCARDABLE
"..\\..\\db_odbc_dll\\bin\\tpcc_odbc.dll"

/////////////////////////////////////////////////////////////////////////////
//
// TUXEDO_APP
//

IDR_TUXEDO_APP          TUXEDO_APP DISCARDABLE  "..  \\..\\tuxapp\\bin\\tuxapp.exe"

/////////////////////////////////////////////////////////////////////////////
//
// TUXEDO_DLL
//

IDR_TUXEDO_DLL          TUXEDO_DLL DISCARDABLE
"..\\..\\tm_tuxedo_dll\\bin\\tpcc_tuxedo.dll"

/////////////////////////////////////////////////////////////////////////////
//
// COM_DLL
//

IDR_COM_DLL             COM_DLL DISCARDABLE
"..\\..\\tm_com_dll\\bin\\tpcc_com.dll"

/////////////////////////////////////////  ////////////////////////////////
//
// COM_PS_DLL
//

IDR_COMPS_DLL           COM_PS_DLL DISCARDABLE
"..\\..\\tpcc_com_ps\\bin\\tpcc_com_ps.dll"

/////////////////////////////////////////////////////////////////////////////
//
// COM_ALL_DLL
//

IDR_COMALL_DLL          COM_ALL_DLL DISCARDABLE
"..\\..\\tpcc_com_all\\bin\\tpcc_com_all.dll"

/////////////////////////////////////////////////////////////////////////////
//
// COM_TYPLIB
//

IDR_COMTYPLIB_DLL       COM_TYPLIB DISCARDABLE
"..\\..\\tpcc_com_all\\src\\tpcc_com_all.tlb"

#endif    // English (U.S.) resources
/////////////////////////////////////////////////////////////////////////////


#ifndef APSTUDIO_INVOKED
/////////////////////////////////////////////////////////////////////////////
//
// Generated from the TEXTINCLUDE 3 resource.
//


/////////////////////////////////////////////////////////////////////////////
#endif    // not APSTUDIO_INVOKED
```

install/src/install_com.cpp

```
/*          FILE:                       INSTALL_COM.CPP
 *                                                  Microsoft TPC -C Kit Ver.
4.20.000
 *                                                  Copyright Microsoft, 1999
 *            All Rights Reserved
 *
 *                                                  not audited
 *
 *          PURPOSE:    installation code for COM application for TPC  -C Web
Kit
 *          Contact:    Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                      4.20.000 - first version
 */

#define _WIN32_WINNT 0x0500

#include <comdef.h>
#include <comadmin.h>
#include <stdio.h>
#include <tchar.h>

extern "C"
{
            BOOL install_com(char *szDllPath);
}

BOOL install_com(char *szDllPath)
{
            ICOMAdminCatalog*       pCOMAdminCat = NULL;
            ICatalogCollection*     pCatalogCollectionApp    = NULL;
            ICatalogCollection*     pCatalogCollectionCo     = NULL;
            ICatalogCollection*     pCatalogCollectionItf    = NULL;
            ICatalogCollection*     pCatalogCollectionMethod = NULL;

            ICatalogObject*                     pCatalogObjectApp    =
NULL;
            ICatalogObject*                     pCatalogObjectCo     =
NULL;
            ICatalogObject*                     pCatalogObjectItf    =
NULL;
            ICatalogObject*                     pCatalogObjectMethod =
NULL;

            _bstr_t                                             bstrTemp,
bstrTemp2, bstrTemp3, bstrTemp4;
            _bstr_t                                             bstrDllPath =
szDllPath;
            _variant_t                          vTmp, vKey;
            long                                                lActProp,
lCount, lCountCo, lCountItf, lCountMethod;
            bool                                                bTmp;


            CoInitializeEx(NULL, COINIT_MULTITHREADED);
```

```
        HRESULT hr = CoCreateInstance(CLSID_COMAdminCatalog,
                                      NULL,
                                      CLSCTX_INPROC_SERVER,
                                      IID_ICOMAdminCata log,
                                      (void**) &pCOMAdminCat);
        if (!SUCCEEDED(hr)) goto Error;

        bstrTemp = "Applications";

        // Attempt to connect to "Applications" in the Catalog
        hr = pCOMAdminCat ->GetCollection(bstrTemp,
                                      (IDispatch**) &pCatalogCollectionApp);
        if (!SUCCEEDED(hr)) goto Error;

        // Attempt to load the "Applications" collection
        hr = pCatalogCollectionApp ->Populate();
        if (!SUCCEEDED(hr)) goto Error;

        hr = pCatalogCollectionApp ->get_Count(&lCount);
        if (!SUCCEEDED(hr)) goto Error;

        // iterate throug h applications to delete existing "TPC  -C"
application (if any)
        while (lCount > 0)
        {
                hr = pCatalogCollectionApp ->get_Item(lCount  - 1,
(IDispatch**) &pCatalogObjectApp);
                if (!SUCCEEDED(hr)) goto Error;

                hr = pCatalogObjectApp ->get_Name(&vTmp);
                if (!SUCCEEDED(hr)) goto Error;

                if (wcscmp(vTmp.bstrVal, L"TPC -C"))
                {
                        lCount--;
                        continue;
                }
                else
                {
                        hr = pCatalogCollectionApp -
>Remove(lCount  - 1);
                        if (!SUCCEEDED(hr)) goto Error;
                        break;
                }
        }

        hr = pCatalogCollectionApp ->SaveChanges(&lActProp);
        if (!SUCCEEDED(hr)) goto Error;

        // add the new application
        hr = pCatalogCollectionApp ->Add((IDispatch**) &pCatalogObjectApp);
        if (!SUCCEEDED(hr)) goto Error;

        // set properties
        bstrTemp = "Name";
        vTmp = "TPC -C";
        hr = pCatalogObjec tApp->put_Value(bstrTemp, vTmp);
        if (!SUCCEEDED(hr)) goto Error;

        // set as a library (in process) application
        bstrTemp = "Activation";
        lActProp = COMAdminActivationInproc;
        vTmp = lActProp;
        hr = pCatalogObjectApp ->put_Value(bstrTemp, vTmp);
        if (!SUCCEEDED(hr)) goto Error;

        // set security level to process
        bstrTemp = "AccessChecksLevel";
        lActProp = COMAdminAccessChecksApplicationLevel;
        vTmp = lActProp;
        hr = pCatalogObjectApp ->put_Value(bstrTemp, vTmp);
        if (!SUCCEEDED(hr)) goto Error;

        // save key to get the Components collection later
        hr = pCatalogObjectApp ->get_Key(&vKey);
        if (!SUCCEEDED(hr)) goto Error;

        // save changes (app creation) so component installation will work
        hr = pCatalogCollectionApp ->SaveChanges(&lActProp);
        if (!SUCCEEDED(hr )) goto Error;

        pCatalogObjectApp ->Release();
        pCatalogObjectApp = NULL;

        bstrTemp  = "TPC -C";
        // app name
        bstrTemp2 =   bstrDllPath + "tpcc_com_all.dll";
        // DLL
        bstrTemp3 =   bstrDllPath + "tpcc_com_all.tlb";
        // type library (TLB)
        bstrTemp4 =   bstrDllPath + "tpcc_com_ps.dll";
        // proxy/stub dll

        hr = pCOMAdminCat ->InstallComponent(bstrTemp,
                                                        bstrTemp2,
                                                        bstrTemp3,
                                                        bstrTemp4);
        if (!SUCCEEDED(hr)) goto Error;

        bstrTemp = "Components";
        hr = pCatalogCollectionApp ->GetCollection(bstrTemp, vKey,
(IDispatch**) &pCatalogCollectionCo);
        if (!SUCCEEDED(hr)) goto Error;

        hr = pCatalogCollectionCo ->Populate();
        if (!SUCCEEDED(hr)) goto Error;

        hr = pCatalogCollectionCo ->get_Count(&lCountCo);
        if (!SUCCEEDED(hr)) goto Error;

        // iterate through components in application and set the properties
        while (lCountCo > 0)
        {
                hr = pCatalogCollectionCo ->get_Item(lCountCo  - 1,
(IDispatch**) &pCatalogObjectCo);
                if (!SUCCEEDED(hr)) goto Error;

                // used for debugging (view the name)
                hr = pCatalogObjectCo ->get_Name(&vTmp);
                if (!SUCCEEDED(hr)) goto Error;

                bstrTemp = "ConstructionEnabled";
                bTmp = TRUE;
                vTmp = bTmp;
                hr = pCatalogObjectCo ->put_Value(bstrTemp, vTmp);
                if (!SUCCEEDED(hr)) goto Error;

                bstrTemp = "ConstructorS tring";
                bstrTemp2 = "dummy string (do not remove)";
                vTmp = bstrTemp2;
                hr = pCatalogObjectCo ->put_Value(bstrTemp, vTmp);
                if (!SUCCEEDED(hr)) goto Error;

                bstrTemp = "JustInTimeActivation";
                bTmp = TRUE;
                vTmp = bTmp;
                hr = pCatalogObjectCo ->put_Value(bstrTemp, vTmp);
                if (!SUCCEEDED(hr)) goto Error;

                bstrTemp = "MaxPoolSize";
                vTmp.Clear(); // clear variant so it isn't stored as a
bool (_variant_t feature)
                vTmp = (long)30;
                hr = pCatalogObjectCo ->put_Value(bstrTemp, vTmp);
                if (!SUCCEEDE D(hr)) goto Error;

                bstrTemp = "ObjectPoolingEnabled";
                bTmp = TRUE;
                vTmp = bTmp;
                hr = pCatalogObjectCo ->put_Value(bstrTemp, vTmp);
                if (!SUCCEEDED(hr)) goto Error;



                // save key to get the InterfacesForComponent
collection
                hr = pCatalogObje ctCo->get_Key(&vKey);
                if (!SUCCEEDED(hr)) goto Error;

                bstrTemp = "InterfacesForComponent";
                hr = pCatalogCollectionCo ->GetCollection(bstrTemp,
vKey, (IDispatch**) &pCatalogCollectionItf);
                if (!SUCCEEDED(hr)) goto Error;

                hr = pCatalogCollectionIt f->Populate();
                if (!SUCCEEDED(hr)) goto Error;

                hr = pCatalogCollectionItf ->get_Count(&lCountItf);
                if (!SUCCEEDED(hr)) goto Error;

                // iterate through interfaces in component
                while (lCountItf > 0)
                {
                        hr = pCatalogCollectionItf -
>get_Item(lCou ntItf - 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";
                        hr = pCatalogCollectionItf -
>GetCollection(bstrTemp, vKey, (IDispatch**) &pCatalogCollectionMethod);
                        if (!SUCCEEDED(hr)) goto Error;

                        hr = pCatalogCollectionMethod -
>Populate();
                        if (!SUCCEEDED(hr)) goto Error;

                        hr = pCatalogCollectionMethod -
>get_Count(&lCountMethod);
                        if (!SUCCEEDED(hr)) goto Error;

                        // iterate through methods of interface
                        while (lCountMethod > 0)
                        {
                                hr =
pCatalogCollectionMethod ->get_Item(lCountMethod  - 1, (IDispatch**)
&pCatalogObjectMethod);
                                if (!SUCCEEDED( hr)) goto
Error;

                                bstrTemp = "AutoComplete";
                                bTmp = TRUE;
                                vTmp = bTmp;
                                hr = 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;
}
```

install/src/RESOURCE.H

```
//{{NO_DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by install.rc
//
#define IDD_DIALOG1                     101
#define IDI_ICON1                        102
#define IDR_TPCCDLL                     103
#define IDD_DIALOG2                     105
#define IDI_ICON2                       106
#define IDR_DELIVERY                    107
#define IDD_DIALOG3                     108
#define IDR_LI CENSE1                    112
#define IDD_DIALOG4                     113
#define IDR_TPCCOBJ1                    117
#define IDR_TPCCSTUB1                   118
#define IDR_DBLIB_DLL                   122
#define IDR_ODBC_DLL                    123
#define IDR_TUXEDO_APP                   124
#define IDR_TUXEDO_DLL                  125
#define IDR_COM_DLL                     126
#define IDR_COMPS_DLL                   127
#define IDR_COMALL_DLL                  128
#define IDR_COMTYPLIB_DLL               12  9
#define BN_LOG                          1001
#define ED_KEEP                         1002
#define ED_THREADS                      1003
#define ED_THREADS2                     1004
#define IDC_PATH                        1007
```

```
#define IDC_VERSION                     1009
#define IDC_RESULTS                     1010
#define IDC_PROGRESS1                   1011
#define IDC_STATUS                      1012
#define IDC_BUTTON1                     1013
#define ED_MAXCONNECTION                1014
#define ED_IIS_MAX_THEAD_POOL_LIMIT     1015
#define ED_MAXDELIVERIES                1016
#define ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE 1017
#define ED_IIS_THREAD_TIMEOUT           1018
#define ED_IIS_LISTEN_BACKLOG           1019
#define IDC_DBLIB                       1021
#define IDC_LICENSE                     1022
#define IDC_ODBC                        1022
#define IDC_CONNECT_POOL                1023
#define ED_DB_SERVER                    1023
#define ED_USER_CONNECT_DELAY_TIME      1024
#define ED_DB_USER_ID                    1024
#define IDC_MTS                         1025
#define IDC_TM_MTS                      1025
#define IDC_TM_TUXEDO                   1026
#define IDC_TM_NONE                     1027
#define ED_DB_PASSWORD                  1028
#define ED_DB_NA ME                      1029
#define IDC_TM_ENCINA                   1030

// Next default values for new objects
//
#ifdef APSTUDIO_INVOKED
#ifndef APSTUDIO_READONLY_SYMBOLS
#define _APS_NEXT_RESOURCE_VALUE        130
#define _APS_NEXT_COMMAND_VALUE          40001
#define _APS_NEXT_CONTROL_VALUE         1031
#define _APS_NEXT_SYMED_VALUE           101
#endif
#endif
```

isapi_dll/isapi_dll.dsp

```
# Microsoft Developer Studio Project File   - Name="isapi_dll"  - Package Owner=<4>
# Microsoft Developer Studio Generate  d Build File, Format Version 6.00
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Dynamic  -Link Library" 0x0102

CFG=isapi_dll  - Win32 IceCAP
!MESSAGE This is not a valid makefile. To build this project using NMAKE,
!MESSAGE use the Export Makefile command and   run
!MESSAGE
!MESSAGE NMAKE /f "isapi_dll.mak".
!MESSAGE
!MESSAGE You can specify a configuration when running NMAKE
!MESSAGE by defining the macro CFG on the command line. For example:
!MESSAGE
!MESSAGE NMAKE /f "isapi_dll.mak" CFG="isapi_dll   - Win32 IceCAP"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "isapi_dll  - Win32 Release" (based on "Win32 (x86) Dynamic  -Link
Library")
!MESSAGE "isapi_dll  - Win32 Debug" (based on "Win32 (x86) Dynamic  -Link Library")
!MESSAGE "isapi_dll - Win32 IceCAP" (based on "Win32 (x86) Dynamic  -Link Library")
!MESSAGE

# Begin Project
# PROP AllowPerConfigDependencies 0
# PROP Scc_ProjName ""
# PROP Scc_LocalPath ""
CPP=cl.exe
MTL=midl.exe
RSC=rc.exe

!IF  "$(CFG)" == "isapi_dll  - Win32 Release "

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX
/FD /c
# ADD CPP /nologo /MD /W3 /GX /O2 /D "NDEBUG" /D "WIN32" /D "_WINDOWS" /YX /FD /c
# ADD BASE MTL /nologo /D "NDEBUG"   /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 ker nel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
# ADD
LINK32 ..\common\txnlog\lib\release\rtetime.lib .. \common\txnlog\lib\release\spin
lock.lib ..\common\txnlog\lib\release\error.lib

..\common\txnlog\lib\release\txnlog.lib wsock32.lib kernel32.lib user32.lib
gdi32.lib winspool.lib comdlg32.lib advapi32.lib shell32.lib

ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp3   2.lib /nologo
/subsystem:windows /dll /machine:I386 /nodefaultlib:"LIBCMT"

/out:".\bin/tpcc.dll"
# SUBTRACT LINK32 /nodefaultlib

!ELSEIF  "$(CFG)" == "isapi_dll   - Win32 Debug"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_D ir "Debug"
# PROP BASE Intermediate_Dir "Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MTd /W 3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD CPP /nologo /MDd /W3 /GX /Zi /Od /D "_DEBUG" /D "WIN32" /D "_WINDOWS" /FR
/YX /FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "_DEBUG" /mkty plib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/pdbtype:sept
# ADD
LINK32 ..\common\txnlog\lib\debug\rtetime.lib .. \common\txnlog\lib\debug\spinlock
.lib ..\common\txnlog\lib\debug\error.lib

..\common\txnlog\lib\debug\txnlog.lib wsock32.lib kernel32.lib user32.lib
gdi32.lib winspool.lib comdlg32.lib advapi32.lib shell32.lib

ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib /nologo
/subsystem:windows /dll /debug /machin e:I386 /nodefaultlib:"LIBCMTD"

/out:".\bin/tpcc.dll" /pdbtype:sept
# SUBTRACT LINK32 /profile /pdb:none /nodefaultlib

!ELSEIF  "$(CFG)" == "isapi_dll   - Win32 IceCAP"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "isapi_ dl"
# PROP BASE Intermediate_Dir "isapi_dl"
# PROP BASE Ignore_Export_Lib 0
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MDd /W3 /GX /Zi /Od /D "_DEBUG" /D "WIN32" /D "_WINDOWS"
/FR /YX /FD /Gh /c
# ADD CPP /nologo /MD /W3 /GX /Zi /O2 /D "NDEBUG" /D "ICECAP" /D "WIN32" /D
"_WINDOWS" /FR /YX /FD /Gh /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o "   NUL" /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.l  ib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/out:".\bin/tpcc.dll" /pdbtype:sept
# SUBTRACT BASE LINK32 /profile /pdb:none
# ADD LINK32
icap.lib ..\common\txnlog\lib\release\rtetime.lib .. \common\txnlog\lib\release\sp
inlock.lib ..\common\txnlog\lib\release\error.lib

..\common\txnlog\lib\release\txnlog.lib wsock32.lib kernel32.lib user32.lib
gdi32.lib winspool.lib comdlg32.lib a  dvapi32.lib shell32.lib

ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib /nologo
/subsystem:windows /dll /debug /machine:I386 /out:".  \bin/tpcc.dll"

/pdbtype:sept
# SUBTRACT LINK32 /profile /pdb:none /map

!ENDIF

# Begin Target

# Name "isapi_d ll - Win32 Release"
# Name "isapi_dll  - Win32 Debug"
# Name "isapi_dll  - Win32 IceCAP"
# Begin Group "Source"

# PROP Default_Filter "*.cpp, *.def, *.rc"
# Begin Source File

SOURCE=.\src\tpcc.cpp
# End Source File
# Begin Source File

SOURCE=.\src\tpcc.def
# End Source File
# Begin Source File

SOURCE=.\src\tpcc.rc
# End Source File
# End Group
# Begin Group "Header Files"

# PROP Default_Filter "*.h, *.hpp"
# Begin Source File

SOURCE=..\common\src\error.h
# End Source File
# Begin Source File

SOURCE=..\common\src\ReadRegistry.h
# End Source File
# Begin Source File

SOURCE=.\src\tpcc.h
# End Source File
# Begin Source File

SOURCE=..\db_dblib_dll\src\tpcc_dblib.h
# End Source File
# Begin Source File

SOURCE=..\db_odbc_dll\src\tpcc_odbc.h
# End Source Fi le
# Begin Source File

SOURCE=..\tm_tuxedo_dll\src\tpcc_tux.h
# End Source File
# Begin Source File

SOURCE=..\common\src\trans.h
# End Source File
# Begin Source File

SOURCE=..\common\src\txn_base.h
# End Source File
# End Group
# End Target
# End Proje ct
```

isapi_dll/src/resource.h

```
//{{NO_DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by tpcc.rc
//
#define IDD_DIALOG1                     101

// Next default values for new objects
//
#ifdef APSTUDIO_INVOKED
#ifndef APSTUDIO_READONLY_SYMBOLS
#define _APS_NEXT_RESOURCE_VALUE        102
#define _APS_NEXT_COMMAND_VALUE         40001
#define _APS_NEXT_CONTROL_VALUE         1000
#define _APS_NEXT_SYMED_VALUE           101
#endif
#endif
```

isapi_dll/src/tpcc.cpp

```
/*            FILE:                         TPCC.C
 *                                                      Microsoft TPC-C Kit Ver.
4.20.000
 *                                                      Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                                      Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
 *
 *            PURPOSE:      Main module for TPCC.DLL which is an ISAPI service dll.
 *            Contact:       Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                          4.20.000  - reworked error handling; added options for
COM and Encina txn monitors
 */

#include <windows.h>
#include <process.h>
#include <tchar.h>
#include <stdio.h>
#include <s tdarg.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>
```

```
#ifdef ICECAP
#include <icapexp.h>
#endif

#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 "..\..\common\txnlog\include\rtetime.h"
#include "..\..\common\txnlog\include\spinlock.h"
#include "..\..\common\txnlog\include\txnlog.h"

// Database layer includes
#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

// Txn monitor layer includes
#include "..\..\tm_com_dll\src\tpcc_com.h"
            // COM Services implementation on TPC  -C txns
#include "..\..\tm_tuxedo_dll\src\tpcc_tux.h"                           // interface
to Tuxedo libraries
#include "..\..\tm_encina_dll\src\tpcc_enc.h"                           // interface
to Encina libraries

#include "httpext.h"                                                    //ISAPI DLL
information header
#include "tpcc.h"
            //this dlls specific structure, value e.t. header.


#define       LEN_ERR_STRING              256

// defines for Make<Txn>Form calls to distingu  ish input and output flavors
#define       OUTPUT_FORM    0
#define INPUT_FORM          1

char                        szMyComputerName[MAX_COMPUTERNAME_LENGTH+1];

//Terminal client id structure
TERM          Term = { 0, 0, 0, NULL };

// The WEBCLIENT_VERSION string specifies the version level of this    web client
interface.
// The RTE must be synchronized with the interface level on login, otherwise the
login
// will fail.  This is a sanity check to catch problems resulting from mismatched
versions
// of the RTE and web client.
#define WEBCLIENT_VERSION  "410"

static        CRITICAL_SECTION                          TermCriticalSection;

static  HINSTANCE hLibInstanceTm = NULL;
static  HINSTANCE hLibInstanceDb = NULL;

TYPE_CTPCC_DBLIB            *pCTPCC_DBLIB_new;
TYPE_CTPCC_ODBC                         *pCTPCC_ODBC_new;
TYPE_CTPCC_TUXEDO           *pCTPCC_TUXEDO_new;
TYPE_CTPCC_ENCINA   *pCTPCC_ENCINA_new;
TYPE_CTPCC_ENCINA   *pCTPCC_ENCINA_post_init;
TYPE_CTPCC_COM                          *pCTPCC_COM_new;

// For deferred Delivery txns:

CTxnLog                                                             *txnDelilog =
NULL;                                   //used to log delivery transaction
information

HANDLE
            hWorkerSemaphore            = INVALID_HANDLE_VALUE;
HANDLE                                                              hDoneEvent
                        = INVALID_HANDLE_VALUE;                             *pDeliHandles
            = NULL;

// configuration settings from registry
TPCCREGISTRYDATA                        Reg;


DWORD
            dwNumDeliveryThreads = 4;
CRITICAL_SECTION                        DelBuffCriticalSection;
            //critical section for delivery transactions cache
DELIVERY_TRANSACTION        *pDelBuff                                       = NULL;
DWORD                                                               dwDelBuffSize
            = 100;                      // size of circular buffer for delivery
txns
DWORD
            dwDelBuffFreeCount;
            // number of buffers free
DWORD
            dwDelBuffBusyIndex          = 0;                        // index
position of entry waiting to be delivered
DWORD
            dwDelBuffFreeIndex          = 0;                        // index
position of unused entry

#include "..\..\common\src\ReadRegistry.cpp"

/* FUNCTION: DllMain
 *
 * PURPOSE:   This function is the entry point for the DLL.  This im  plementation
is based on the
 *                                      fact that DLL_PROCESS_ATTACH is only
called from the inet service once.
 *
 * ARGUMENTS: HANDLE        hModule
            module handle
 *                                                              DWORD
            ul_reason_for_call          reason for call
 *                                                              LPVOID        lpReserved
                        reserved for future use
 *
 * RETURNS:                 BOOL          FALSE
            errors occured in initialization
 *
            TRUE                                                DLL
successfully initialized
 */

BOOL APIENTRY DllMain(HANDLE hModule, DWORD ul_reason_for_call, LPVOID
lpReserved)
{
            DWORD  i;
            char szEvent[LEN_ERR_STRING] = "  \0";
            char szLogFile[128];
            char szDllName[128];

// debugging....
// DebugBreak();

            try
            {
                        switch( ul_reason_for_call )
                        {
                                    case DLL_PROCESS_ATTACH:
                                                                    {               DWORD dwSize
= MAX_COMPUTERNAME_LENGTH+1;

            GetComputerName(szMyComputerName, &dwSize);

            szMyComputerName[dwSize] = 0;
                                                                    }


            DisableThreadLibraryCalls((HMODULE)hModule);

            InitializeCriticalSection(&TermCriticalSection);

                                                                    if
( ReadTPCCRegistrySettings( &Reg ) )
                                                                    throw new
CWEBCLNT_ERR( ERR_MISSING_REGISTRY_ENTRIES );

                                                                    dwDelBuffSize =
min( Reg.dwMaxPendingDeliveries, 10000 );  // min with 10000 as a sanity
constraint
                                                                    dwNumDeliveryThreads =
min( Reg.dwNumberOfDeliveryThreads, 100 );  // min with 100 as a sanity
constraint

                                                                    TermInit();

                                                                    // load DLL for txn monitor
                                                                    if (Reg.eTxnMon == TUXEDO)
                                                                    {

            strcpy( szDllName, Reg.szPath );

            strcat( szDllName, "tpcc_tuxedo.dll");

            hLibInstanceTm = LoadLibrary( szDllName );
                                                                    if
(hLibInstanceTm == NULL)

            throw new CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName,
GetLastError() );

                                                                    // get
function pointer to wrapper for class constructor

            pCTPCC_TUXEDO_new = (TYPE_CTPCC_TUXEDO*)
GetProcAddress(hLibInstanceTm,"CTPCC_TUXEDO_new");
                                                                    if
(pCTPCC_TUXEDO_new == NULL)

            throw new CWEBCLNT_ERR( ERR_GETPROCADDR_FA  ILED, szDllName,
GetLastError() );
                                                                    }
                                                                    else if (Reg.eTxnMon ==
ENCINA)
                                                                    {

            strcpy( szDllName, Reg.szPath );

            strcat( szDllName, "tpcc_encina.dll");

            hLibInstanceTm = LoadLibrary( szDllName );
                                                                    if
(hLibInstanceTm == NULL)

            throw new CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName,
GetLastError() );

                                                                    // get
function pointer to wrapper for class constructor

            pCTPCC_ENCINA_new = (TYPE_CTPCC_ENCINA*)
GetProcAddress(hLibInstanceTm,"CTPCC_ENCINA_new");

            pCTPCC_ENCINA_post_init  = (TYPE_CTPCC_ENCINA*)
GetProcAddress(hLibInstanceTm,"CTPCC_ENCINA_post_init");
                                                                    if
(pCTPCC_ENCINA_new == NULL)

            throw new CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName,
GetLastError() );
                                                                    }
                                                                    else if (Reg.eTxnMon ==
COM)
                                                                    {

            strcpy( szDllName, Reg.szPath );

            strcat( szDllName, "tpcc_com.dll");

            hLibInstanceTm = LoadLibrary( szDllName );
                                                                    if
(hLibInstanceTm == NULL)

            throw new CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName,
GetLastError() );

                                                                    // get
function pointe r to wrapper for class constructor

            pCTPCC_COM_new = (TYPE_CTPCC_COM*)
GetProcAddress(hLibInstanceTm,"CTPCC_COM_new");
                                                                    if
(pCTPCC_COM_new == NULL)

            throw new CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName,
GetLastError() );
                                                                    }

                                                                    // load DLL for database
connection
                                                                    if ((Reg.eTxnMon == None)
|| (dwNumDeliveryThreads > 0))
                                                                    {
                                                                    if
(Reg.eDB_Protocol == DBLIB)
                                                                    {

            strcpy( szDllName, Reg.szPath );

            strcat( szDllName, "tpcc_dblib.dll");

            hLibInstanceDb = LoadLibrar y( szDllName );

            if (hLibInstanceDb == NULL)

            throw new CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName,
GetLastError() );


            // get function pointer to wrapper for class constructor

            pCTPCC_DBLIB_new = (TYPE_CTPCC_DBLIB*)
GetProcAddress(hL ibInstanceDb,"CTPCC_DBLIB_new");

            if (pCTPCC_DBLIB_new == NULL)

            throw new CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName,
GetLastError() );
                                                                    }
                                                                    else if
(Reg.eDB_Protocol == ODBC)
                                                                    {

            strcpy( szDllName, Reg.szPath );

            strcat( szDllName, "tpcc_odbc.dll");

            hLibInstanceDb = LoadLibrary( szDllName );

            if (hLibInstanceDb == NULL)

            throw new CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName,
GetLastError() );


            // get function pointer to wrapper for class construc  tor

            pCTPCC_ODBC_new = (TYPE_CTPCC_ODBC*)
GetProcAddress(hLibInstanceDb,"CTPCC_ODBC_new");

            if (pCTPCC_ODBC_new == NULL)

            throw new CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName,
GetLastError() );
                                                                    }
                                                                    }

                                                                    if (dwNumDeliveryThread s)
                                                                    {
                                                                    // for
deferred delivery txns:
                                                                    hDoneEvent =
CreateEvent( NULL, TRUE /* manual reset */, FALSE /* initially not signalled */,
NULL );

            InitializeCriticalSection(&DelBuffCriticalSection);

            hWorkerSemaphore = CreateSemaphore( NULL,   0, dwDelBuffSize, NULL );

            dwDelBuffFreeCount = dwDelBuffSize;


            InitJulianTime(NULL);

                                                                    // create
unique log file name based on delilog  -yymmdd-hhmm.log
                                                                    SYSTEMTIME
Time;
```

```
		GetLocalTime( &Time );
		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 );
		                                                        txnDelilog =
new CTxnLog(szLogFile, TXN_LOG_WRITE);
		                                                        //write event
into txn log for START
		                                                        txnDelilog-
>WriteCtrlRecToLo g(TXN_EVENT_START, szMyComputerName, sizeof(szMyComputerName));
		                                                        // allocate
structures for delivery buffers and thread mgmt
		                                                        pDeliHandles
= new HANDLE[dwNumDeliveryThreads];
		                                                        pDelBuff =
new DELIVERY_TRANSACTION[dwDelBuffSize];
		                                                        // launch
DeliveryWorkerThread to perform actual delivery txns
		                                                        for(i=0;
i<dwNumDeliveryThreads; i++)
		                                                        {
		pDeliHandles[i] = (HANDLE) _beginthread( DeliveryWorkerThread, 0,
NULL );
		if (pDeliHandles[i] == INVALID_HANDLE_VALUE)
		throw new CWEBC LNT_ERR( ERR_DELIVERY_THREAD_FAILED );
		                                                        }
		                                                }
		                                                break;
		                                        case DLL_PROCESS_DETACH:
		                                                if (dwNumDeliveryThreads)
		                                                {
		                                                        if
(txnDelilog != NULL)
		                                                        {
		//write event into txn log for STOP
		txnDelilog->WriteCtrlRecToLog(TXN_EVENT_STO P, szMyComputerName,
sizeof(szMyComputerName));

		// This will do a clean shutdown of the delivery log file
		CTxnLog        *txnDelilogLocal = txnDelilog;
		txnDelilog= NULL;
		delete txnDelilogLocal;
		                                                        }
		                                                        delete []
pDeliHandles;
		                                                        delete []
pDelBuff;

		CloseHandle( hWorkerSemaphore );
		CloseHandle( hDoneEvent );
		DeleteCriticalSection(&DelBuffCriticalSection);
		                                                }

		DeleteCriticalSection(&TermCriticalSection);
		                                                if (hLibInstanceTm != NULL)
		FreeLibrary( hLibIns tanceTm );
		                                                hLibInstanceTm = NULL;
		                                                if (hLibInstanceDb != NULL)
		FreeLibrary( hLibInstanceDb );
		                                                hLibInstanceDb = NULL;
		                                                Sleep(500);
		                                                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: GetExtensionVersio n
 *
 * 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++)
		                WaitForSingl eObject( 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 va lid comment
sent
 *
 * COMMENTS:   None
 *
 */

DWORD WINAPI HttpExtensionProc(EXTENSION_CONTROL_BLOCK *pECB)
{
		int                                        iCmd, FormId, TermId,
iSyncId;
		char                       szBuffer[4096];

		int                                        lpbSize;
		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 !=
Term.pClientData[TermId].iSyncId)
		                                                throw new
CWEBCLNT_ERR( ERR_INVALID_SYNC_CONNECTION );

		                                //set use time
		                                Term.pClientData[TermId].iTickCount =
GetTickCount();
		                }

		                switch(iCmd)
		                {
		                case 0:
		                                WelcomeForm(pECB, szBuffer);
		                                break;
		                case 1:
		                                switch( FormId )
		                                {
		                                                case WELCOME_FORM:
		                                                case MAIN_MENU_FORM:
		                                                                break;
		                                                case NEW_ORDER_FORM:
		ProcessNewOrderForm(pECB, TermId, szBuffer);
		                                                                break;
		                                                case PAYMENT_F ORM:
		ProcessPaymentForm(pECB, TermId, szBuffer);
		                                                                break;
		                                                case DELIVERY_FORM:
		ProcessDeliveryForm(pECB, TermId, szBuffer);
		                                                                break;
		                                                case ORDER_STATUS_FORM:
		ProcessOrderStatusForm(pECB, TermId, szBuffer);
		                                                                break;
		                                                case STOCK_LEVEL_FORM:
		ProcessStockLevelForm(pECB, TermId, szBuffer);
		                                                                break;
		                                }
		                                break;
		                case 2:
		                                // new-order selected from menu; display
new-order input form
		                                MakeNewOrderForm(TermId, NULL,
INPUT_FORM, szBuffer);
		                                break;
		                case 3:
		                                // payment selected from menu; display
payment input form
		                                MakePaymentForm(TermId, NULL, INPUT_FORM,
szBuffer);
		                                break;
		                case 4:
		                                // delivery selected from menu; display
delivery input form
		                                MakeDeliveryForm(TermId, NULL,
INPUT_FORM, szBuffer);
		                                break;
		                case 5:
		                                // order-status selected from menu;
display order-status input form
		                                MakeOrderStatusForm(TermId, NULL,
INPUT_FORM, szBuffer);
		                                break;
		                case 6:
		                                // stock-level selected from menu;
display stock-level input form
		                                MakeStockLevelForm(T ermId, NULL,
INPUT_FORM, szBuffer);
		                                break;
		                case 7:
		                                // ExitCmd
		                                TermDelete(TermId);
		                                WelcomeForm(pECB, szBuffer);
		                                break;
		                case 8:
		                                SubmitCmd(pECB, szBuffer);
		                                break;
		                case 9:
		                                // menu
		                                MakeMainMenuForm(TermId,
Term.pClientData[Term Id].iSyncId, szBuffer);
		                                break;
		                case 10:
		                                // CMD=Clear
		                                // resets all connections; should only
be used when no other connections are active
		                                TermDeleteAll();
		                                TermInit();
		                                WelcomeForm(pECB, szBuffer);
		                                break;
		                case 11:        // CMD=Stats
		                                StatsCmd(pECB, szBuffer);
		                                break;
		                }
		}
		catch (CBaseErr *e)
		{
		                ErrorForm( pECB, e ->ErrorType(), e ->ErrorNum(), TermId,
iSyncId, e->ErrorText(), szBuffer );
```

```
                delete e;
            }
            catch (...)
            {
                ErrorForm( pECB, ERR_TYPE_WEBDLL, 0, TermId, iSyncId,
"Error: Unhandled exception in Web Client.", szBuffer );
            }

#ifdef ICECAP
            StopCAP();
#endif


            lpbSize = strlen(szBuffer);
            wsprintf(szHeader1,
                                "Content-Type: text/html \r\n"
                                "Content-Length: %d\r\n"
                                "Connection: Keep-Alive\r\n\r\n" ,
lpbSize);
            strcat( szHeader1, szBuffer );

            (*pECB->ServerSupportFunction)(pECB ->ConnID,
HSE_REQ_SEND_RESPONSE_HEADER, szHeader, (LPDWORD) &dwSize, (LPDWORD)szHeader1);

            //finish up and keep connection
            pECB->dwHttpStatusCode = 200;
            return HSE_STATUS_SUCCESS_AND_KEEP_CONN  ;
}


void WriteMessageToEventLog(LPTSTR lpszMsg)
{
    TCHAR   szMsg[256];
    HANDLE  hEventSource;
    LPTSTR  lpszStrings[2];

    // Use event logging to log the error.
    //
    hEventSource = RegisterEventSource(NULL, TEXT("TPCC.DLL"));

    _stprintf(szMsg, TEXT("Error in TPCC.DLL: "));
    lpszStrings[0] = szMsg;
    lpszStrings[1] = lpszMsg;

    if (hEventSource != NULL)
        {
        ReportEvent(hEventSource, // handle of event source
            EVENTLOG_ERROR_TYPE,  // event type
            0,                    // event category
            0,                    // event ID
            NULL,                 // current user's SID
            2,                    // strings in lpszStrings
            0,                    // no bytes of raw d ata
            (LPCTSTR *)lpszStrings,    // array of error strings
            NULL);                // no raw data

        (VOID) DeregisterEventSource(hEventSource);
    }
}


/* FUNCTION: DeliveryWorkerThread
 *
 * PURPOSE:   This function processes de ferred delivery txns.  There are typically
several
 *                                threads running this routine.  The
number of threads is determined by an entry
 *                                read from the registry.  The thread
waits for work by waiting on semaphore.
 *
semaphore is released.  After processing
 *                                When a delivery txn is posted, t he
 *                                the delivery txn, information is logged
to record the txn status and execution
 *                                time.
 */

/*static*/ void DeliveryWorkerThread(void *ptr)
{
            CTPCC_BASE                  *pTxn = NULL;

            DELIVERY_TRANSACTION                    delivery;
            PDELIVERY_DATA
            pDeliveryData;
            TXN_RECORD_TPCC_DELIV_DEF   txnDeliRec;

            DWORD
            index;
            HANDLE
            handles[2];

            SYSTEMTIME                  trans_end;                  //delivery
transaction finished time
            SYSTEMTIME                  trans_start;  //delivery transaction
start time

            assert(txnDeli log != NULL);

            try
            {
                    if (Reg.eDB_Protocol == ODBC)
                                pTxn = pCTPCC_ODBC_new( Reg.szDbServer,
Reg.szDbUser, Reg.szDbPassword, szMyComputerName, Reg.szDbName );
                    else if (Reg.eDB_Protocol == DBLIB)
                                pTxn = pCTPCC_DBLIB_new( Reg.szDbServer,
Reg.szDbUs er, Reg.szDbPassword, szMyComputerName, Reg.szDbName );
                    pDeliveryData = pTxn ->BuffAddr_Delivery();
            }
            catch (CBaseErr *e)
            {
                    char szTmp[1024];
                    wsprintf( szTmp, "Error in Delivery Txn thread.  Could
not connect to database.  "
                                                "%s.  Server=%s, Us er=%s,
Password=%s, Database=%s",
                                                e->ErrorText(),
Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword, Reg.szDbName );
                    WriteMessageToEventLog( szTmp );
                    delete e;
                    goto ErrorExit;
            }
            catch (...)
            {
                    WriteMessageToEventLog(TEXT("Unhandled exception
caught in DeliveryWorkerThread."));
                    goto ErrorExit;
            }

            while (TRUE)
            {
                    try
                    {
                            //while delivery thread running, i.e.
user has not requested termination
                            while (TRUE)
                            {
                                    // need to wait for
multiple objects: program exit or worker semaphore;
                                    handles[0] = hDoneEvent;
                                    handles[1] =
hWorkerSemaphore;
                                    index =
WaitForMultipleObjects( 2, &handles[0], FALSE, INFINITE );
                                    if (index == WAIT_OBJECT_0)
                                                goto
ErrorExit;

                                    ZeroMemory(&txnDeliRec,
sizeof(txnDeliRec));
                                    txnDeliRec.Tx nType =
TXN_REC_TYPE_TPCC_DELIV_DEF;

                                    // make a local copy of
current entry from delivery buffer and increment buffer index
                                    EnterCriticalSection(&DelBuffCriticalSection);
                                    delivery =
*(pDelBuff+dwDelBuffBusyIndex);
                                    dwDelBuffFreeCount++;
                                    dwDelBuffBusyIndex++;
                                    if (dwDelBuffBusyIndex ==
dwDelBuffSize)              // wrap-around if at end of buffer
                                    dwDelBuffBusyIndex = 0;

                                    LeaveCriticalSection(&DelBuffCriticalSection);

                                    pDeliveryData ->w_id =
delivery.w_id;
                                    pDeliveryData ->o_carrier_id
= delivery.o_carrier_id;

                                    txnDeliRec.w_id =
pDeliveryData ->w_id;
                                    txnDeliRec.o_carrier_id =
pDeliveryData ->o_carrier_id;
                                    txnDeliRec.TxnStartTO =
Get64BitTime(&delivery.queue);

                                    GetLocalTime( &trans_start );
                                    pTxn->Delivery();
                                    GetLocalTime( &trans_end );

                                    //log txn
                                    txnDeliRec.TxnStatus =
ERR_SUCCESS;

                                    for (int i=0; i<10; i++)

                                    txnDeliRec.o_id[i] = pDeliveryData ->o_id[i];
                                    txnDeliRec.DeltaT4 =
(int)(Get64BitTime(&trans_end)   - txnDeliRec.TxnStartTO);
                                    txnDeliRec.Del taTxnExec =
(int)(Get64BitTime(&trans_end)   - Get64BitTime(&trans_start));

                                    if (txnDelilog != NULL)
                                                txnDelilog-
>WriteToLog(&txnDeliRec);
                            }
                    }
                    catch (CBaseErr *e)
                    {
                            char szTmp[1024];
                            wsprintf( szTmp, "Error in Delivery Txn
thread.  %s" , e->ErrorText() );
                            WriteMessageToEventLog( szTmp );

                            // log the error txn
                            txnDeliRec.TxnStatus = e ->ErrorType();
                            if (txnDelilog != NULL)
                                    txnDelilog-
>WriteToLog(&txnDeliRec);

                            delete e;
                    }
                    catch (...)
                    {
                            // unhandled exception; sh ouldn't
happen; not much we can do...
                            WriteMessageToEventLog(TEXT("Unhandled
exception caught in DeliveryWorkerThread."));
                    }
            }

ErrorExit:
            delete pTxn;
            _endthread();
}

/* FUNCTION: PostDeliveryInfo
 *
 * PURPOSE:   This function enters the delivery  txn into the deferred delivery
buffer.
 *
 * RETURNS:                BOOL          FALSE         delivery information posted
successfully
 *
            TRUE          error cannot post delivery info
 */

BOOL PostDeliveryInfo(short w_id, short o_carrier_id)
{
            BOOL bError;

            EnterCriticalSection(&DelBu ffCriticalSection);
            if (dwDelBuffFreeCount > 0)
            {
                    bError = FALSE;
                    (pDelBuff+dwDelBuffFreeIndex) ->w_id
            = w_id;
                    (pDelBuff+dwDelBuffFreeIndex) ->o_carrier_id
            = o_carrier_id;
                    GetLocalTime(&(pDelBuff+dwDelBuffFreeIndex)  ->queue);

                    dwDelBuffFreeCount --;
                    dwDelBuffFreeIndex++;
                    if (dwDelBuffFreeIndex == dwDelBuffSize)
                                dwDelBuffFreeIndex = 0;
            // wrap-around if at end of buffer
            }
            else
                    // No free buffers.  Return an error, which indicates
that the delivery buffer is full.
                    // Most likely, the  number of delivery worker threads
needs to be increased to keep up
                    // with the txn rate.
                    bError = TRUE;
            LeaveCriticalSection(&DelBuffCriticalSection);

            if (!bError)
                    // increment worker semaphore to wake up a worker
thread
                    ReleaseSemaphore( hWorke rSemaphore, 1, NULL );

            return bError;
}

/* FUNCTION: ProcessQueryString
 *
 * PURPOSE:   This function extracts the relevent information out of the http
command passed in from
 *                                the browser.
 *
 * COMMENTS:  If this is the initial connection i.e. client   is at welcome screen
then
 *                                there will not be a
terminal id or current form id.  If this is the case
 *                                then the pTermid and
pFormid return values are undefined.
 */

void ProcessQueryString(EXTENSION_CONTROL_BLOCK *pECB, int *pCmd, int *pFormId,
int *pTermId, int *pSyncId)
{
            char *ptr = pECB ->lpszQueryString;
            char szBuffer[25];
            int i;

            //allowable client command strings i.e. CMD=command
            static char *szCmds[] =
            {
                    "Process", "..NewOrder..", "..Payment..",
"..Delivery..", "..Order -Status..", " .Stock-Level..",
                    "..Exit..", "Submit", "Menu", "Clear", "Stats", ""
            };

            *pCmd          = 0;                    // default is the login
screen
            *pTermId = 0;

            // if no params (i.e., empty query string), then return login screen
            if (strlen(pECB ->lpszQueryString) == 0)
                    return;

            // parse FORMID, TERMID, and SYNCID
            *pFormId = GetIntKeyValue(&ptr, "FORMID", NO_ERR, NO_ERR);
            *pTermId = GetIntKeyValue(&ptr, "TERMID", NO_ERR, NO_ERR);
            *pSyncId = GetIntKeyValue(&ptr, "SYNCID", NO_ERR, NO_ERR);

            // parse CMD
            GetKeyValue(&ptr, " CMD", szBuffer, sizeof(szBuffer),
ERR_COMMAND_UNDEFINED);

            // see which command it matches
            for(i=0; ; i++)
            {
                    if (szCmds[i][0] == 0)
                                // no more; no match; return error
                                throw new
CWEBCLNT_ERR( ERR_COMMAND_UNDEFINED );
```

```
                        if ( !strcmp(szCmds[i], szB uffer) )
                        {
                                *pCmd = i+1;
                                break;
                        }
                }
}

/* FUNCTION: void WelcomeForm
 *
 */

void WelcomeForm(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
{
                char szTmp[1024];

                //welcome to tpc -c html form buffer, this is first form client sees.
                strcpy( szBu ffer,          "<HTML><HEAD><TITLE>TPC -C Web
Client</TITLE></HEAD><BODY>"

                "<B><BIG>Microsoft TPC -C Web Client (ver 4.20)</BIG></B> <BR> <BR>"

                "<font face=\"Courier New\"><PRE>"

                "Compiled: "__DATE__", "__TIME__" <BR>"

                "Source:   "__FILE__" (" __TIMESTAMP__") <BR>"

                "</PRE></font>"

                "<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=\"1\">"

                "<INPUT TYPE=\"hidden\" NAME=\"TERMID\" VALUE=\"0\">"

                "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\" VALUE=\"0\">"

                "<INPUT TYPE=\"hidden\" NAME=\"VERSION\" VALUE=\"" WEBCLIENT_VERSION
"\">"
                                );

                sprintf( szTmp,             "Configurati on Settings: <BR><font
face=\"Courier New\" color=\"blue\"><PRE>"
                                                                "Txn Monitor
= <B>%s</B><BR>"
                                                                "Database
protocol      = <B>%s</B><BR>"
                                                                "Max
Connections        = <B>%d</B><BR>"
                                                                "# of
Delivery Threads  = <B>%d</B><BR>"
                                                                "Max Pending
Deliveries = <B>%d</B><BR>"
                                , szTxnMonNames[Reg.eTxnMon],
szDBNames[Reg.eDB_Protocol],
                                Reg.dwMaxConnections,
dwNumDeliveryThreads, dwDelBuffSize );
                strcat( szBuffer, szTmp);

                if (Reg.eTxnMon == COM)
                {
                        sprintf( szTmp,             "COM Single Poo l        =
<B>%s</B><BR>",
                                Reg.bCOM_SinglePool ? "YES" : "NO" );
                        strcat( szBuffer, szTmp);
                }
                strcat( szBuffer, "</PRE></font>");

                if (Reg.eTxnMon == None)
                        // connection options may be specified when not using
a txn monitor
                        sprintf( szTmp,             "Please enter your database
options for this connection:<BR>"

                "<font face=\"Courier New\" color=\"blue\"><PRE>"

                "DB Server    = <INPUT NAME= \"db_server\" SIZE=20 VALUE= \"%s\"><BR>"

                "DB User ID   = <INPUT NAME= \"db_user\" SIZE=20 VALUE= \"%s\"><BR>"

                "DB Password  = <INPUT NAME= \"db_passwd\" SIZE=20 VALUE= \"%s\"><BR>"

                "DB Name      = <INPUT NAME= \"db_name\" SIZE=20 VALUE= \"%s\"><BR>"

                "</PRE></font>"
                                                        , Reg.szDbServer,
Reg.szDbUser, Reg.szDbPassword, Reg.szDbName );
                else
                        // if using a txn monitor, connection options are
determined from registry; can't
                        // set per user.  show options fyi
                        sprintf( szTmp,             "Database options which
will be used by the transaction monitor:<BR>"

                "<font face=\"Courier New\" color=\"blue\"><PRE>"

                "DB Server              = <B>%s</B><BR>"

                "DB User ID             = <B>%s</B><BR>"

                "DB Password            = <B>%s</B><BR>"

                "DB Name                = <B>%s</B><BR>"

                "</PRE></font>"
                                                                , Reg.szDbServer,
Reg.szDbUser, R eg.szDbPassword, Reg.szDbName );
                strcat( szBuffer, szTmp);

                sprintf( szTmp,             "Please enter your Warehouse and
District for this session:<BR>"
                                                                "<font
face=\"Courier New\" color=\"blue\"><PRE>" );
                strcat( szBuffer, szTmp);
                strcat( szBuffer,           "Warehouse ID = <INPUT NAME= \"w_id\"
SIZE=4><BR>"

                "District ID  = <INPUT NAME= \"d_id\" SIZE=2><BR>"

                "</PRE></font><HR>"

                "<INPUT TYPE= \"submit\" NAME=\"CMD\" VALUE=\"Submit\">"

                "</FORM></BODY></HTML>");
}

/* FUNCTION: SubmitCmd
 *
 * PURPOSE :   This function allocated a new terminal id in the Term structure
array.
 *
 */

void SubmitCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
{
                int                         iNewTerm;
                char          *ptr = pECB ->lpszQueryString;

                char          szVersion[32] = { 0 };
                char          szServer[32]  = { 0 };
                char          szUser[32]                = "sa";
                char          szPassword[32]            = { 0 };
                char          szDatabase[32]            = "tpcc";

                // validate version field; the version field ensures that the RTE is
synchronized with the web client
                GetKeyValue(&ptr, "VERSION", szVersion, sizeof(szVersion),
ERR_VERSION_MISMATCH);
                if ( strcmp( szVersion, WEBCLIENT_VERSION ) )
                        throw new CWEBCLNT_ERR( ERR_VERSION_MISMATCH );

                if (Reg.eTxnMon == None)
                {
                        // parse Server name
                        GetKeyValue(&ptr, "db_server", szServer,
sizeof(szServer), ERR_NO_SERVER_SPECIFIED);
                        // parse User name
                        GetKeyValue(&ptr, "db_user", szUser, sizeof(szUser),
NO_ERR);
                        // parse Password
                        GetKeyValue(&ptr, "db_passwd", szPassword,
sizeof(szPassword), NO_ERR);
                        // parse Database name
                        GetKeyValue(&ptr, "db_name", szDatabase,
sizeof(szDa tabase), NO_ERR);
                }

                // parse warehouse ID
                int w_id = GetIntKeyValue(&ptr, "w_id", ERR_HTML_ILL_FORMED,
ERR_W_ID_INVALID);
                if ( w_id < 1 )
                        throw new CWEBCLNT_ERR( ERR_W_ID_INVALID );

                // parse district ID
                int d_id = GetIntKeyValue(&ptr, "d_id", ERR  _HTML_ILL_FORMED,
ERR_D_ID_INVALID);
                if ( d_id < 1 || d_id > 10 )
                        throw new CWEBCLNT_ERR( ERR_D_ID_INVALID );



                iNewTerm = TermAdd();

                Term.pClientData[iNewTerm].w_id = w_id;
                Term.pClientData[iNewTerm].d_id = d_id;

                try
                {
                        if (Reg.eTxnMon == TUXED O)
                                Term.pClientData[iNewTerm].pTxn =
pCTPCC_TUXEDO_new();
                        else if (Reg.eTxnMon == ENCINA)
                                Term.pClientData[iNewTerm].pTxn =
pCTPCC_ENCINA_new();
                        else if (Reg.eTxnMon == COM)
                                Term.pClientData[iNewTerm].pTxn =
pCTPCC_COM_new( Reg.bCOM_SinglePoo l );
                        else if (Reg.eDB_Protocol == ODBC)
                                Term.pClientData[iNewTerm].pTxn =
pCTPCC_ODBC_new( szServer, szUser, szPassword, szMyComputerName, szDatabase );
                        else if (Reg.eDB_Protocol == DBLIB)
                                Term.pClientData[iNewTerm].pTxn =
pCTPCC_DBLIB_new( szSer ver, szUser, szPassword, szMyComputerName, szDatabase );
                }
                catch (...)
                {
                        TermDelete(iNewTerm);
                        throw;                  // pass exception upward
                }

                MakeMainMenuForm(iNewTerm, Term.pClientData[iNewTerm].iSyncId,
szBuffer);
}

/* FUNCTION: StatsCmd
 *
 * PURPOSE:   This function returns to the browser the total number of active
terminal ids.
 *                         This routine is for
development/debugging purposes.
 *
 */

void StatsCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
{
                int i;
                int         iTotal;

                EnterCriticalSection(&TermCri  ticalSection);

                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 INS  TALL
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_QTY_WITHOUT_SUP PW,
		"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 entere  d."

},
		{		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 Statu s 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_MISS ING_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."


	},
		{		0,
	""

	}
	};
	char szTmp[256];
	int i = 0;
	while (TRUE)
	{
		if (errorMsgs[i].s zMsg[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 fo  r specific key values.
 *
 * ARGUMENTS: char				*pQueryString http string
from client browser
 *						char
	*pKey						key value to look for
 *						char
	*pValue						character array into which
to place key's value
 *						int
		iMax						maximum
length of key value a rray.
 *						WEBERROR
	err								error value
to throw
 *
 * 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 for matted either KEY=value& or KEY=value  \0. This DLL
formats
 *						TPC-C input fields in such
a manner that the keys can be extracted in the
 *						above manner.
 */

void GetKeyValue(char **pQueryString, char *pKey, char *pValue, int iMax,
WEBERROR err)
{
	char *ptr;

	if ( !(ptr=strstr(*pQueryString, pKey)) )
		goto ErrorExit;
	ptr += strlen(pKey);
	if ( *ptr != '=' )
		goto ErrorExit;
	ptr++;

	iMax--;  // one position is for terminating null
	while( *ptr && *ptr != '&' && iMax)
	{
		*pValue++ = *ptr++;
		iMax--;
	}
	*pValue = 0;  // terminating null

	*pQueryString = ptr;
	return;

ErrorExit:
	if (err != NO_ERR)
		throw new CWEBCLNT_ERR( err );
	*pValue = 0;  // return empty result string
}

/* FUNCTION: GetIntKeyValue
 *
 * PURPOSE:   This function parses a h ttp formatted string for a specific key
value.
 *
 * ARGUMENTS: char				*pQueryString http string
from client browser
 *						char
	*pKey						key value to look for
 *						WEBERROR
	NoKeyErr			error value to throw if key not found
 *						WEBERROR
	NotIntErr			error value to throw if value not
numeric
 *
```

```
 * RETURNS:                integer
 *
 * ERROR:                  if (the pKey value is not found) then
 *                                                                  if
(NoKeyErr != NO_ERR)
 *
                throw CWEBCLNT_ERR(err)
 *                                                                  else
 *
                return 0
 *                                                  else if (non-numeric char
found) then
 *                                                                  if
(NotIntErr != NO_ERR) then
 *
                throw CWEBCLNT_ERR(err)
 *                                                                  else
 *
                return 0
 *
 * COMMENTS:   http keys are formatted either KEY=value& or KEY=value  \0. This DLL
formats
 *                                                  TPC-C input fields in such
a manner that the keys can be extracted  in the
 *                                                  above manner.
 */

int GetIntKeyValue(char **pQueryString, char *pKey, WEBERROR NoKeyErr, WEBERROR
NotIntErr)
{
                char *ptr0;
                char *ptr;

                if ( !(ptr=strstr(*pQueryString, pKey)) )
                                goto ErrorNoKey;
                ptr += strlen(pKey);
                if ( *ptr != '=' )
                                goto ErrorNoKey;
                ptr++;

                ptr0 = ptr;                     // remember starting point
                // scan string until a terminator (null or &) or a non  -digit
                while( *ptr && *ptr != '&' && isdigit(*ptr) )
                                ptr++;

                // make sure we stopped scanning for the right reason
                if ((ptr0 == ptr) || (*ptr && *ptr != '&'))
                {
                                if (NotIntErr != NO_ERR)
                                                throw new CWEBCLNT_ERR( NoKeyErr );
                                return 0;
                }

                *pQueryString = ptr;
                return atoi(ptr0);

ErrorNoKey:
                if (NoKeyErr != NO_ERR)
                                throw new CWEBCLNT_ERR( NoKeyErr );
                return 0;
}

/* FUNCTION: TermInit
 *
 * PURPOSE:    This function initializes the client terminal structure; it is
called when the TPCC.DLL
 *                                  is first loaded by the inet service.
 *
 */

void TermInit(void)
{
                EnterCriticalSection(&TermCriticalSection);

                Term.iMasterSyncId          = 1;
                Term.iNumEntries            = Reg.dwMaxConnections+1;

                Term.pClientData            = NULL;
                Term.pClientData            = (PCLIENTDATA)malloc(Term.iNumEntries *
sizeof(CLIENTDATA));
                if (Term.pClientData == NULL)
                {
                                LeaveCriticalSection(&TermCriticalSection);
                                throw new CWEBCLNT _ERR( ERR_MEM_ALLOC_FAILED );
                }

                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: T ermDeleteAll
 *
 * PURPOSE:    This function frees allocated resources associated with the terminal
structure.
 *
 * ARGUMENTS: none
 *
 * RETURNS:                None
 *
 * COMMENTS:   This function is called only when the inet service unloads the
TPCC.DLL
 *
 */

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            = 0;
                if ( Term.pClientData  )
                                free(Term.pClientData);
                Term.pClientData            = NULL;

                LeaveCriticalSection(&TermCriticalSection);
}

/* FUNCTION: TermAdd
 *
 * PURPOSE:    This function assigns a terminal id which is used to identify a
client browser.
 *
 * RETURNS:                int                             assigned termin al id
 *
 */

int TermAdd(void)
{
                DWORD           i;
                int                             iNewTerm, iTickCount;

                if (Term.iNumEntries == 0)
                                return -1;

                EnterCriticalSection(&TermCriticalSection);
                if (Term.iFreeList != 0)
                {               // position is available
                                iNewTerm = Term.iFreeList;
                                Term.iFreeL ist = 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, iTic kCount=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 to requestor.
                                if ((GetTickCount()  - iTickCount) < 60000)
                                {

                LeaveCriticalSecti on(&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
                id                              Terminal id of client exiting
 *
 */

void TermDe lete(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;

                                LeaveCritical Section(&TermCriticalSection);
                }
}

/* FUNCTION: MakeErrorForm
 */

void ErrorForm(EXTENSION_CONTROL_BLOCK *pECB, int iType, int iErrorNum, int
iTermId, int iSyncId, char *szErrorText, char *szBuffer )
{
                wsprintf(szBuffer,
                                "<HTML><HEAD><TITLE>TPC -C Error</TITLE></HEAD><BODY>"
                                "<FORM ACTION= \"tpcc.dll \" METHOD= \"GET\">"
                                "<INPUT TYPE= \"hidden\" NAME= \"STATUSID \"
VALUE= \"%d\">"
                                "<INPUT TYPE= \"hidden\" NAME= \"ERROR \" VALUE= \"%d\">"
                                "<INPUT TYPE= \"hidden\" NAME= \"FORMID \" VALUE= \"%d\">"
                                "<INPUT TY PE= \"hidden\" NAME= \"TERMID \" VALUE= \"%d\">"
                                "<INPUT TYPE= \"hidden\" NAME= \"SYNCID \" VALUE= \"%d\">"
                                "<BOLD>An Error Occurred</BOLD><BR><BR>"
                                "%s"
                                "<BR><BR><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></BODY></HTML>"
                                , iType, iErrorNum, MAIN_MENU_FORM, iTermId, iSyncId,
szErrorText );
}

/* FUNCTION: MakeMainMenuForm
 */

void MakeMainMenuForm(int iTermId, int iSyncId, char *szForm)
{
                wsprintf(szFo rm,
                                "<HTML><HEAD><TITLE>TPC -C Main
Menu</TITLE></HEAD><BODY>"
                                "Select Desired Transaction.<BR><HR>"
                                "<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\">"
                                "<INPUT TYPE= \"submit \" NAME= \"CMD\"
VALUE= \"..NewOrder.. \">"
                                "<INPUT TYP E= \"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></BODY></HTML>"
                                , MAIN_MENU_FORM, iTermId, iSyncId);
}

/* FUNCTION: MakeStockLevelForm
 *
 * PURPOSE:    This function constructs the Stock Level HTML page.
 *
 * 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 MakeStockLevelForm(int iTermId, STOCK_LEVEL_DATA *pStockLevelData, BOOL
bInput, char *szForm)
{
                int             c;

                c = wsprintf(szForm,
                                "<HTML><HEAD><TITLE>TPC -C Stock
Level</TITLE></HEAD><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 \">
Stock-Level<BR>"
                                "Warehouse: %4.4d   District : %2.2d<BR> <BR>",
                                STOCK_LEVEL_FORM, iTermId,
Term.pClientData[iTermId].iSyncId,
                                Term.pClientData[iTermId].w_id,
Term.pClientData[iTermId].d_id);

                if ( bInput )
                {
                                strcpy(szForm+c,
                                                "Stock Level Threshold: <INPUT
NAME= \"TT* \" SIZE=2><BR> <BR>"
                                                "low stock:    </font><BR> <BR> <BR>
<BR> <BR> <BR> <BR> <BR> <BR> <BR>"
                }
}
```

```
                                        " <BR> <BR> <BR> <BR> <BR> <BR>
<BR></PRE><HR>"
                                        "<INPUT TYPE= \"submit \" NAME= \"CMD\"
VALUE= \"Process \">"
                                        "<INPUT TYPE= \"submit \" NAME= \"CMD\"
VALUE= \"Menu \">"
                                        "</FORM></ HTML>" );
                }
                else
                {
                        wsprintf(szForm+c,
                                        "Stock Level Threshold: %2.2d<BR> <BR>"
                                        "low stock: %3.3d</font> <BR> <BR> <BR>
<BR> <BR> <BR> <BR> <BR> <BR>"
                                        " <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR></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>"
                                        , pStockLevelData ->threshold,
pStockLevelData ->low_stock);
                }
}

/* FUNCTION: MakeNewOrderForm
 *
 * COMMENTS:  The internal client buff er is created when the terminal id is
assigned and should not
 *                                                      be freed except when the
client terminal id is no longer needed.
 */

void MakeNewOrderForm(int iTermId, NEW_ORDER_DATA *pNewOrderData, BOOL bInput,
char *szForm)
{
                int                     i, c;
                BOOL            bValid;
                static          char szBR[] = " <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR>";

                if (!bInput)
                        assert( pNewOrderData ->exec_status_code == eOK ||
pNewOrderData ->exec_status_code == eInvalidItem );

                bValid = (bInput || (pNewOrderDa  ta->exec_status_code == eOK));

                c = wsprintf(szForm,
                                "<HTML><HEAD><TITLE>TPC -C New
Order</TITLE></HEAD><BODY>"
                                "<FORM ACTION= \"tpcc.dll \" METHOD= \"GET \">"
                                "<INPUT TYPE= \"hidden \" NAME= \"STATUSID \"
VALUE= \"%d \">"
                                "<INPUT TYPE= \"hidden \" NAME= \"ERROR \" VALUE= \"O \">"
                                "<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 \">
New Order<BR>"
                                , bValid ? O : ERR_BAD_ITEM_ID, NEW_ORDER_FORM,
iTermId, Term.pClientData[iTermId].iSyncId);

                if ( bInput )
                {
                        c += wsprintf(szForm+c, "Warehouse: %4.4d   ",
Term.pClientData[iTermId].w_id );

                        strcpy( szForm+c,
                                        "District: <INPUT N AME= \"DID* \" SIZE=1>
Date:<BR>"
                                        "Customer:  <INPUT NAME= \"CID* \" SIZE=4>
Name:                   Credit:     %Disc:<BR>"
                                        "Order Number:          Number of
Lines:          W_tax:          D_tax:<BR> <BR>"
                                        " Supp_W  Item_Id  Item Name
Qty  Stock  B/G  Price    Amount<BR>"
                                        "  <INPUT NAME= \"SP00* \" SIZE=4>  <INPUT
NAME= \"IID0O* \" SIZE=6>                       <INPUT NAME=  \"QtyO0* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP01* \" SIZE=4>  <INPUT
NAME= \"IID01* \" SIZE=6>                       <INPUT NAME=  \"QtyO1* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP02* \" SIZE=4>  <INPUT
NAME= \"IID02* \" SIZE=6>                       <INPUT NAME=  \"QtyO2* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP03* \" SIZE=4>  <INPUT
NAME= \"IID03* \" SIZE=6>                       <INPUT NAME=  \"QtyO3* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP04* \" SIZE=4>  <INPUT
NAME= \"IID04* \" SIZE=6>                       <INPUT NAME=  \"QtyO4* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP05* \" SIZE=4>  <INPUT
NAME= \"IID05* \" SIZE=6>                       <INPUT NAME=  \"QtyO5* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP06* \" SIZE=4>  <INPUT
NAME= \"IID06* \" SIZE=6>                       <INPUT NAME=  \"Qty06* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP07* \" SIZE=4>  <INPUT
NAME= \"IID07* \" SIZE=6>                       <INPUT NAME=  \"Qty07* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP08* \" SIZE=4>  <INPUT
NAME= \"IID08* \" SIZE=6>                       <INPUT NAME=  \"Qty08* \"
SIZE=1><BR>"
                                        "  <INPUT NA ME= \"SP09* \" SIZE=4>  <INPUT
NAME= \"IID09* \" SIZE=6>                       <INPUT NAME=  \"Qty09* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP10* \" SIZE=4>  <INPUT
NAME= \"IID10* \" SIZE=6>                       <INPUT NAME=  \"Qty10* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP11* \" SIZE=4>  <INPUT
NAME= \"IID11* \" SIZE=6>                       <INPUT NAME=  \"Qty11* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP12* \" SIZE=4>  <INPUT
NAME= \"IID12* \" SIZE=6>                       <INPUT NAME=  \"Qty12* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP13* \" SIZE=4>  <INPUT
NAME= \"IID13* \" SIZE=6>                       <INPUT NAME=  \"Qty13* \"
SIZE=1><BR>"
                                        "  <INPUT NAME= \"SP14* \" SIZE=4>  <INPUT
NAME= \"IID14* \" SIZE=6>                       <INPUT NAME=  \"Qty14* \"
SIZE=1><BR>"
                                        "Execution Status:
Total:<BR>"
                                        "</font></PRE><HR>"
                                        "<INPUT TYPE= \"submit \" NAME= \"CMD\"
VALUE= \"Process \">"
                                        "<INPUT TYPE= \"submit \" NAME= \"CMD\"
VALUE= \"Menu \">"
                                        "</FORM></HTML>"
                                        );
                }
                else
                {
                        c += wsprintf(szForm+c, "Warehouse: %4.4d
District: %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_ta  x: %5.2f
D_tax: %5.2f  <BR> <BR>"
                " Supp_W  Item_Id  Item Name                  Qty  Stock  B/G  Price
Amount<BR>",
                                                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_i d,
                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:          W_tax:          D_tax:<BR> <BR>"
                                                " Supp_W  Item_Id  Item
Name                    Qty  Stock  B/G  Price    Amount<BR>"
                                                , 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 commited.                   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 MakePaymen tForm(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= \"O \">"
                                "<INPUT TYPE= \"hidden \" NAME= \"ERROR \" VALUE= \"O \">"
                                "<INPUT TYPE= \"hidden \" NAME= \"FORMID \" VALUE= \"%d \">"
                                "<INPUT TYPE= \"hidden \" NAME= \"TERMID \" VALUE= \"%d \">"
                                "<INPUT TYPE= \"hidden \" NAME= \"SYNCID \" VALUE= \"%d \">"
                                "<PRE><font fa ce= \"Courier \">
Payment<BR>"
                                "Date: "
                                , PAYMENT_FORM, iTermId,
Term.pClientData[iTermId].iSyncId);

                if ( !bInput )
                {
                        c += wsprintf(szForm+c, "%2.2d  -%2.2d-
%4.4d %2.2d:%2.2d:%2.2d",
                                        pPaymentData ->h_date.day,
                                        pPaymentData ->h_date.month,
                                        pPaymentData ->h_date.year,
                                        pPaymentData ->h_date.hour,
                                        pPaymentData ->h_date.minute,
                                        pPaymentData ->h_date.second);
                }

                if ( bInput )
                {
                        c += wsprintf(szForm+c,
                                        "<BR> <BR>Warehouse: %4.4d"
                                                                District:
<INPUT NAME= \"DID* \" SIZE=1><BR> <BR> <BR> <BR> <BR>"
                                        "Customer: <INPUT NAME= \"CID* \" SIZE=4>"
                                        "Cust -Warehouse: <INPUT NAME= \"CWI* \"
SIZE=4>  "
                                        "Cust -District: <INPUT NAME= \"CDI* \"
SIZE=1><BR>"
                                        "Name:                          <INP UT
NAME= \"CLT* \" SIZE=16>                Since:<BR>"
                                        "
Credit:<BR>"
                                        "
Disc:<BR>"
                                        "
```

```
Phone:<BR> <BR> "
                                        "Amount Paid:           $<INPUT
NAME=\"HAM*\" SIZE=7>       New Cust -Balance:<BR>"
                                        "Credit Limit:<BR> <BR>Cust -Data: <BR>
<BR> <BR> <BR> <BR></font></PRE><HR>"
                                        "<INPUT TYPE= \"submit\" NAME= \"CMD\"
VALUE= \"Process \"><INPUT TYPE= \"submit\" NAME= \"CMD\" VALUE= \"Menu \">"
                                        "</BODY></FORM></HTML>"
                                        , Term.pClientData[iTermId].w_id);
                }
                else
                {
                        c += wsprintf(szForm+c,
                                        "<BR> <BR>Warehouse: %4.4d
District: %2.2d<BR>"
                                        "%-20s                  % -20s<BR>"
                                        "%-20s                  % -20s<BR>"
                                        "%-20s %-2s %5.5s -%4.4s        % -20s %-
2s %5.5s -%4.4s<BR> <BR>"
                                        "Customer: %4.4d  Cust -Warehouse: %4.4d
Cust-District: %2.2d<BR>"
                                        "Name:    % -16s %-2s %-16s
Since:  %2.2d -%2.2d -%4.4d<BR>"
                                        "         % -20s
Credit: % -2s<BR>"
                                        , Term.pClientData[iTermId].w_id,
pPaymentData ->d_id
                                        , pPaymentData ->w_street_1,
pPaymentData ->d_street_1
                                        , pPaymentData ->w_street_2,
pPaymentData ->d_street_2
                                        , pPaymentData ->w_city, pPaymentData -
>w_state, pPaymentD ata->w_zip, pPaymentData ->w_zip+5
                                        , pPaymentData ->d_city, pPaymentData -
>d_state, pPaymentData ->d_zip, pPaymentData ->d_zip+5
                                        , pPaymentData ->c_id, pPaymentData -
>c_w_id,        pPaymentData ->c_d_id
                                        , pPaymentData ->c_first, pPaymentData -
>c_middle, pPaymen tData->c_last
                                        , pPaymentData ->c_since.day,
pPaymentData ->c_since.month,           pPaymentData ->c_since.year
                                        , pPaymentData ->c_street_1,
pPaymentData ->c_credit
                                        );

        c += sprintf(szForm+c,
                                        "         % -
20s                     %%Disc:  %5.2f<BR>",
                                        pPaymentData ->c_street_2,
100.0*pPaymentData ->c_discount);

                        c += wsprintf(szForm+c,
                                        "         % -20s %-2s %5.5s -%4.4s
Phone:  %6.6s -%3.3s -%3.3s -%4.4s<BR> <BR>",
                                        pPaymentData ->c_city, pPaymentData -
>c_state, pPaymentData ->c_zip, pPaymentData ->c_zip+5,
                                        pPaymentData ->c_phone, pPaymentData -
>c_phone+6, pPaymentData ->c_phone+9, pPaymentData ->c_phone+12 );

                        c += sprintf(szForm+c,
                                        "Amount Paid:           $%7.2f      New
Cust-Balance: $%14.2f<BR>"
                                        "Credit Limit:   $%13.2f<BR> <BR>"
                                        , pPaymentData ->h_amount, pPaymentData -
>c_balance
                                        , pPaymentData ->c_credit_lim
                                        );

                        if ( pPaymentData ->c_credit[0] == 'B' && pPaymentData -
>c_credit[1] == 'C' )
                                c += wsprintf(szForm+c,
                                                                "Cust-
Data: % -50.50s<BR>             % -50.50s<BR>           % -50.50s<BR>           % -
50.50s<BR>",
                                                                pPaymentData -
>c_data, pPaymentData ->c_data+50, pPaymentData ->c_data+100, pPaymentData -
>c_data+150 );
                        else
                                strcpy(szForm+c, "Cust -Data: <BR> <BR>
<BR> <BR>");

                        strcat(szForm,              " <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.. \">"

                "</BODY></FORM></HTML>");
                }
}

/* FUNCTION: MakeOrderStatusForm
 *
 * COMMENTS:  The internal client buff er is created when the terminal id is
assigned and should not
 *                                                       be freed except when the
client terminal id is no longer needed.
 */

void MakeOrderStatusForm(int iTermId, ORDER_STATUS_DATA *pOrderStatusData, BOOL
blnput, char *szForm)
{
                int                     i, c;
                static char szBR[] = " <BR> <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR> <BR> <BR> <BR> <BR> <BR>";

                c = wsprintf(szForm,
                                "<HTML><HEAD><TITLE>TPC -C Order -
Status</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 \">
Order -Status<BR>"
                                "Warehouse: %4.4d   ",
                                ORDER_STATUS_FORM, iTermId,
Term.pClientData[iTermId].iSyncId, Term.pClientData[iTermId].w_id);

                if ( blnput )
                {
                        strcpy(szForm+c,
                                                "District: <INPUT NAME= \"DID*\"
SIZE=1><BR>"
                                                "Customer: <INPUT NAME= \"CID*\" SIZE=4>
Name:                   <INPUT NAME=  \"CLT*\" SIZE=23><BR>"
                                                "Cust -Balance:<BR> <BR>"
                                                "Order -Number:         Entry -Date:
Carrier -Number:<BR >"
                                                "Supply -W      Item -Id    Qty     Amount
Delivery -Date<BR> <BR> <BR> <BR> <BR>"
                                                " <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR> <BR> <BR> <BR></font></PRE>"
                                                "<HR><INPUT TYPE= \"submit \" NAME= \"CMD\"
VALUE= \"Process \"><INPUT TYPE= \"submit \" NAME= \"CMD\" VALUE= \"Menu \">"
                                                "</BODY></FORM></HTML>" );
                }
                else
                {
                        c += wsprintf(szForm+c,
                                                "District: %2.2d<BR>"
                                                "Customer: %4.4d   Name: % -16s %-2s %-
16s<BR>",
                                                pOrderStatusData ->d_id,
pOrderStatusData ->c_id,
                                                pOrderStatusData ->c_first,
pOrderStatusData ->c_middle, pOrderStatusData ->c_last);

                        c += sprintf(szForm+c, "Cust -Balance: $%9.2f<BR> <BR>",
                                                pOrderStatusData ->c_balance);

                        c += wsprintf(szForm+c,
                                                "Order -Number: %8.8d   Entry -
Date: %2.2d -%2.2d -%4.4d %2.2d:%2.2d:%2.2d   Carrier -Number: %2.2d<BR>"
                                                "Supply -W      Item -Id    Qty     Amount
Delivery -Date<BR>",
                                                pOrderStatusData ->o_id,
                                                pOrderStatusData ->o_entry_d.day,
                                                pOrderStatusData ->o_entry_d.month,
                                                pOrderStatusData ->o_entry_d.year,
                                                pOrderStatusData ->o_entry_d.hou r,
                                                pOrderStatusData ->o_entry_d.minute,
                                                pOrderStatusData ->o_entry_d.second,
                                                pOrderStatusData ->o_carrier_id);

                        for(i=0; i< pOrderStatusData ->o_ol_cnt; i++)
                        {
                                c += sprintf(szForm+c,
"  %4.4d       %6.6d     %2.2d      $%8.2f       %2.2d   -%2.2d -%4.4d<BR>",
                                                pOrderStatusData ->
>OL[i].ol_supply_w_id,
                                                pOrderStatusData ->
>OL[i].ol_i_id,
                                                pOrderStatusData ->
>OL[i].ol_quantity,
                                                pOrderStatusData ->
>OL[i].ol_amount,
                                                pOrderStatusData ->
>OL[i].ol_delivery_d.day,
                                                pOrderStatusData ->
>OL[i].ol_deliver y_d.month,
                                                pOrderStatusData ->
>OL[i].ol_delivery_d.year);
                        }

                        strncpy( szForm+c, szBR, (15 -i)*5 );
                        c += (15 -i)*5;

                        strcpy(szForm+c,
                                                "</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.. \">"
                                                "</BODY></FORM></HTML>" );
                }
}

/* FUNCTION: MakeDeliveryForm
 *
 * 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 MakeDeliveryForm(int iTermId, DELIVERY_DATA *pDeliveryData, BOOL blnput,
char *szForm)
{
                int             c;

                c = wsprintf(szForm,
                                                "<HTML><HEAD><TITLE>TPC -C
Delivery</TITLE></HEAD><BODY>"
                                "<FORM ACTION= \"tpcc.dll \" METHOD= \"GET \">"
                                "<INPUT TYPE= \"hidden \" NAME= \"STATUSID \"
VALUE= \"%d\">"
                                "<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 \">
Delivery<BR>"
                                "Warehouse: %4.4d<BR> <BR>",
                                (!blnput && (pDeliveryData ->exec_status_code !=
eOK)) ? ERR_TYPE_DELIVERY_POST : 0,
                                DELIVERY_FORM, iTermId,
Term.pClientData[iTermId].iSyncId, Term.pClientData[iTermId].w_id);

                if ( blnput )
                {
                        strcpy( szForm+c,
                                                "Carrier Number: <INPUT NAME=  \"OCD*\"
SIZE=1><BR> <BR>"
                                                "Execution Status: <BR> <BR> <BR> <BR>
<BR> <BR> <BR> <BR>"
                                                " <BR> <BR> <BR>  <BR> <BR> <BR>
<BR> </font></PRE><HR>"
                                                "<INPUT TYPE= \"submit \" NAME= \"CMD\"
VALUE= \"Process \">"
                                                "<INPUT TYPE= \"submit \" NAME= \"CMD\"
VALUE= \"Menu \">"
                                                "</BODY></FORM></HTML>" );
                }
                else
                {
                        wsprintf( szForm+c,
                                                "Carrier Number: %2.2d<BR> <BR>"
                                                "Execution Status: %s <BR> <BR> <BR>
<BR> <BR> <BR> <BR> <BR>"
                                                " <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<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.. \">"
                                                "</BODY></FORM></HTML>"
                                                , pDeliveryData ->o_carrier_id,
                                                (pDeliveryData ->exec_status_code ==
eOK) ? "Delivery has been queued." : "Delivery Post Failed      "
                                                );
                }
}

/* FUNCTION: ProcessNewOrderForm
 *
 * PURPOSE:    This function gets  and validates the input data from the new order
form
 *                                      filling in the required input variables.
it then calls the SQLNewOrder
 *                                      transaction, constructs the output form
and writes it back to client
 *                                      browser.
 */

void ProcessNewOrderForm(EXTENSIO N_CONTROL_BLOCK       *pECB, int iTermId, char
*szBuffer)
{
                PNEW_ORDER_DATA                         pNewOrder;

                pNewOrder = Term.pClientData[iTermId].pTxn  ->BuffAddr_NewOrder();

                ZeroMemory(pNewOrder, sizeof(NEW_ORDER_DATA));
                pNewOrder ->w_id = Term.pClientData[iTermId].w_id;
                GetNewOrderData(pECB ->lpszQueryString, pNewOrder);

                Term.pClientData[iTermId].pTxn ->NewOrder();

                pNewOrder = Term.pClientData[iTermId].pTxn  ->BuffAddr_NewOrder();
                MakeNewOrderForm(iTermId, pNewOrder, OUTPUT_FORM, szBuffer );
}

/* FUNCTION: void ProcessPayme ntForm
 *
 * PURPOSE:    This function gets and validates the input data from the payment
form
 *                                      filling in the required input variables.
It then calls the SQLPayment
 *                                      transaction, constructs the output form
and writes it back to client
 *                                      browser.
```

```
 *
 * ARGUMENTS:  EXTENSION_CONTROL_BLOCK      *pECB          passed in structure pointer
from inetsrv.
 *                                                         int
                                                         iTermId        client
browser terminal id
 *
 */

void ProcessPaymentForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char
*szBuffer)
{
                PPAYMENT_DATA pPayment;

                pPayment = Term.pClientData[iTermId].pTxn  ->BuffAddr_Payment();
                ZeroMemory(pPayment, sizeof(PAYMENT_DATA));
                pPayment ->w_id = Term.pClientData[iTermId].w_id;
                GetPaymentData(pECB ->lpszQueryString, pPayment);

                Term.pClientData[iTermId].pTxn  ->Payment();

                pPayment = Term.pClientData[iTermId].pTxn  ->BuffAddr_Payment();
                MakePaymentForm(iTermId, pPayment, OUTPUT_FORM, szBuffer);
}

/* FUNCTION: ProcessOrderStatusForm
 *
 * PURPOSE:    This function gets and validates the input data from the Order
Status
 *                                  form filling in the required input
variables. It then calls the
 *                                  SQLOrderStatus transaction, constructs
the output form and writes it
 *                                  back to client browser.
 *
 * ARGUMENTS:  EXTENSION_CONTROL_BLOCK      *pECB          passed in structure pointer
from inetsrv.
 *                                                         int
                                                         iTermId        client
browser terminal id
 *
 */

void ProcessOrderStatusForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char
*szBuffer)
{
                PORDER_STATUS_DATA          pOrderStatus;

                pOrderStatus = Term.pClientData[iTermId].pTxn  -
>BuffAddr_OrderStatus();
                ZeroMemory(pOrderStatus, sizeof(ORDER_STATUS_DATA));
                pOrderStatus ->w_id = Term.pClientData[iTermId].w_id;
                GetOrderStatusData(pECB ->lpszQueryString, pOrderStatus);

                Term.pClientData[iTermId].pTxn  ->OrderStatus();

                pOrderStatus = Term.pClientData[iTermId].p  Txn-
>BuffAddr_OrderStatus();
                MakeOrderStatusForm(iTermId, pOrderStatus, OUTPUT_FORM, szBuffer);
}

/* FUNCTION: ProcessDeliveryForm
 *
 * PURPOSE:    This function gets and validates the input data from the delivery
form
 *                                  filling in the required input va riables.
It then calls the PostDeliveryInfo
 *                                  Api, The client is then informed that
the transaction has been posted.
 *
 * ARGUMENTS:  EXTENSION_CONTROL_BLOCK      *pECB          passed in structure pointer
from inetsrv.
 *                                                         int
                                                         iTermId        client
browser terminal  id
 *
 */

void ProcessDeliveryForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char
*szBuffer)
{
                char          *ptr = pECB ->lpszQueryString;

                PDELIVERY_DATA              pDelivery;

                pDelivery = Term.pClientData[iTermId].pTxn  ->BuffAddr_Delivery();
                ZeroMemory(pDelivery, size of(DELIVERY_DATA));
                pDelivery ->w_id = Term.pClientData[iTermId].w_id;

                pDelivery ->o_carrier_id     = GetIntKeyValue(&ptr, "OCD*",
ERR_DELIVERY_MISSING_OCD_KEY, ERR_DELIVERY_CARRIER_INVALID);
                if ( pDelivery ->o_carrier_id > 10 || pDelivery  ->o_carrier_id < 1 )
                                throw new
CWEBCLNT_ERR( ERR_DELIVERY_CARRIER_ID_RANGE );

                if (dwNumDeliveryThreads)
                {
                                //post delivery info
                                if ( PostDeliveryInfo(pDelivery  ->w_id, pDelivery ->
>o_carrier_id) )
                                                pDelivery ->exec_status_code =

eDeliveryFailed;
                                else
                                                pDelivery ->exec_status_code = eOK;
                }
                else // delivery is done synchronously if no delivery threads
configured
                                Term.pClientData[iTermId].pTxn  ->Delivery();

                pDelivery = Term.pClientData[iTermId].pTxn  ->BuffAddr_Delivery();
                MakeDeliveryForm(iTermId, pDelivery, OUTPUT_  FORM, szBuffer);
}

/* FUNCTION: ProcessStockLevelForm
 *
 * PURPOSE:    This function gets and validates the input data from the Stock Level
                                  form filling in the required input
variables. It then calls the
 *                                  SQLStockLevel transaction, constructs
the output form and writes it
 *                                  back to client browser.
 *
 * ARGUMENTS:  EXTENSION_CONTROL_BLOCK      *pECB          passed in structure pointer
from inetsrv.
 *                                                         int
                                                         iTermId        client
browser terminal id
 *
 */

void ProcessStockLevelForm(EXTENSION_CONTROL_BLOCK *pEC  B, int iTermId, char
*szBuffer)
{
                char                        *ptr = pECB ->lpszQueryString;

                PSTOCK_LEVEL_DATA           pStockLevel;

                pStockLevel = Term.pClientData[iTermId].pTxn  ->BuffAddr_StockLevel();
                ZeroMemory( pStockLevel, sizeof(STOCK_LEVEL_DATA) );

                pStockLevel ->w_id = Term. pClientData[iTermId].w_id;
                pStockLevel ->d_id = Term.pClientData[iTermId].d_id;

                pStockLevel ->threshold = GetIntKeyValue(&ptr, "TT*",
ERR_STOCKLEVEL_MISSING_THRESHOLD_KEY, ERR_STOCKLEVEL_THRESHOLD_INVALID);
                if ( pStockLevel ->threshold >= 100 || pStockLev el->threshold < 0 )
                                throw new
CWEBCLNT_ERR( ERR_STOCKLEVEL_THRESHOLD_RANGE );

                Term.pClientData[iTermId].pTxn  ->StockLevel();

                pStockLevel = Term.pClientData[iTermId].pTxn  ->BuffAddr_StockLevel();
                MakeStockLevelForm(iTermId, pStockLevel, OUTPUT_FORM, sz  Buffer);
}

/* FUNCTION: GetNewOrderData
 *
 * PURPOSE:    This function extracts and validates the new order form data from an
http command string.
 *
 * ARGUMENTS:  LPSTR                                       lpszQueryString
                client browser http command string
 *                                                         NEW_ORDER_DATA
                *pNewOrderDa ta                          pointer to new order data
structure
 *
 */

void GetNewOrderData(LPSTR lpszQueryString, NEW_ORDER_DATA *pNewOrderData)
{
                char          szTmp[26];
                int           i;
                short         items;
                int           ol_i_id, ol_quantity;
                char          *ptr = lpszQueryString;

                static char szSP[MAX_OL_NEW_OR_DER_ITEMS][6] =
                                { "SP00*", "SP01*", "SP02*", "SP03*", "SP04*",
                                  "SP05*", "SP06*", "SP07*", "SP08*", "SP09*",
                                  "SP10*", "SP11*", "SP12*", "SP13*", "SP14*" };
                static char szIID[MAX_OL_NEW_ORDER_ITEMS][7] =
                                { "IID00*", "IID01*", "IID02*", "IID03  *", "IID04*",
                                  "IID05*", "IID06*", "IID07*", "IID08*", "IID09*",
                                  "IID10*", "IID11*", "IID12*", "IID13*", "IID14*" };
                static char szQty[MAX_OL_NEW_ORDER_ITEMS][7] =
                                { "Qty00*", "Qty01*", "Qty02*", "Qty03*", "Qty04*",
                                  "Qty05*", "Qty06*", "Qt y07*", "Qty08*", "Qty09*",
                                  "Qty10*", "Qty11*", "Qty12*", "Qty13*", "Qty14*" };

                pNewOrderData ->d_id = GetIntKeyValue(&ptr, "DID*",
ERR_NEWORDER_FORM_MISSING_DID, ERR_NEWORDER_DISTRICT_INVALID);
                pNewOrderData ->c_id = GetIntKeyValue(&ptr, "CID*",
ERR_NEWORDER_CUSTOMER_KEY, ERR_NEWORDER_CUSTOMER_INVALID);

                for(i=0, items=0; i<MAX_OL_NEW_ORDER_ITEMS; i++)
                {
                                GetKeyValue(&ptr, szSP[i], szTmp, sizeof(szTmp),
ERR_NEWORDER_MISSING_SUPPW_KEY);
                                if ( szTmp[0] )
                                {
                                                if ( !IsNumeric(szTmp) )
                                                                throw new
CWEBCLNT_ERR( ERR_NEWORDER_SUPPW_INVALID );
                                                pNewOrderData ->OL[items].ol_supply_w_id
= (short)atoi(szTmp);

                                                ol_i_id = pNewOrderData ->
>OL[items].ol_i_id =
                                                                GetIntKeyValue(&ptr,
szIID[i], ERR_NEWORDER_MISSING_IID_KEY, ERR_NEWORDER_ITEMID_INVALID);
                                                if ( ol_i_id > 999999 || ol_i_id < 1 )
                                                                throw new
CWEBCLNT_ERR( ERR_NEWORDER_ITEMID_RANGE );

                                                ol_quantity = pNewOrderData ->
>OL[items].ol_quantity =
                                                                GetIntKeyValue(&ptr,
szQty[i], ERR_NEWORDER_MISSING_QTY_KEY, ERR_NEWORDER_QTY_INVALID);
                                                if ( ol_quantity > 99 || ol_quantity <
1 )
                                                                throw new
CWEBCLNT_ERR( ERR_NEWORDER_QTY_RANGE );

                                                items++;
                                }
                                else
                                {               // nothing entered for supply warehouse,
so item id and qty must also be blank
                                                GetKeyValue(&ptr, szIID[i], szTmp,
sizeof(szTmp), ERR_N EWORDER_MISSING_IID_KEY);
                                                if ( szTmp[0] )
                                                                throw new
CWEBCLNT_ERR( ERR_NEWORDER_ITEMID_WITHOUT_SUPPW );

                                                GetKeyValue(&ptr, szQty[i], szTmp,
sizeof(szTmp), ERR_NEWORDER_MISSING_QTY_KEY);
                                                if ( szTmp[0] )
                                                                throw new
CWEBCLNT_ERR( ERR_NEWORDER_Q TY_WITHOUT_SUPPW );
                                }
                }
                if ( items == 0 )
                                throw new
CWEBCLNT_ERR( ERR_NEWORDER_NOITEMS_ENTERED );

                pNewOrderData ->o_ol_cnt = items;
}

/* FUNCTION: GetPaymentData
 *
 * PURPOSE:    This function extracts and validates the payment form data from an
http command string.
 *
 * ARGUMENTS:  LPSTR                                       lpszQueryString
                client browser http command string
 *                                                         PAYMENT_DATA  *pPaymentData
                pointer to payment data structure
 */

void GetPaymentData(LPSTR lpszQueryString, PAYMENT_DATA *pPaymentData)
{
                char          szTmp[26];
                char          *ptr = lpszQueryString;
                BOOL          bCustIdBlank;

                pPaymentData ->d_id = GetIntKeyValue(&ptr, "DID*",
ERR_PAYMENT_MISSING_DID_KEY, ERR_PAYMENT_DISTRICT_INVALID);

                GetKeyValue(&ptr, "CID*", szTmp, sizeof(szTmp),
ERR_PAYMENT_MISSING_CID_KEY);
                if ( szTmp[0] == 0 )
                {
                                bCustIdBlank = TRUE;
                                pPaymentData ->c_id = 0;
                }
                else
                {               // parse customer id and verify that last name was NOT
entered
                                bCustIdBlank = FALSE;
                                if ( !IsNumeric(szTmp) )
                                                throw new
CWEBCLNT_ERR( ERR_PAYMENT_CUSTOMER_INVALID );
                                pPaymentData ->c_id = atoi(szTmp);
                }

                pPaymentData ->c_w_id = GetIntKeyValue(&ptr, "CWI*",
ERR_PAYMENT_MISSING_CWI_KEY, ERR_PAYMENT_CWI_INVALID);
                pPaymentData ->c_d_id = GetIntKeyValue(&ptr, "CDI*",
ERR_PAYMENT_MISSING_CDI_KEY, ERR_PAYMENT_CDI_INVALID);

                if ( bCustIdBlank )
                {               // customer id is blank, so last name must be entered
                                GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR_PAYMENT_MISSING_CLT_KEY);
                                if ( szTmp[0] == 0 )
                                                throw new
CWEBCLNT_ERR( ERR_PAYMENT_MISSING_CID_CLT );

                                _strupr( szTmp );
                                if ( strlen(pPaymentData ->c_last) > LAST_NAME_LEN )
                                                throw new
CWEBCLNT_ERR( ERR_PAYMENT_LAST_NAME_TO_LONG );
                                strcpy(pPaymentData ->c_last, szTmp);
                }
                else
                {               // parse customer id and verify that last name was NOT
entered
                                GetKeyValue(&ptr, "CLT*", szTm p, sizeof(szTmp),
ERR_PAYMENT_MISSING_CLT_KEY);
                                if ( szTmp[0] != 0 )
                                                throw new
CWEBCLNT_ERR( ERR_PAYMENT_CID_AND_CLT );
                }

                GetKeyValue(&ptr, "HAM*", szTmp, sizeof(szTmp),
ERR_PAYMENT_MISSING_HAM_KEY);
                if (!IsDecimal(szTmp))
                                throw new CWEBCLNT_ER R( ERR_PAYMENT_HAM_INVALID );
                pPaymentData ->h_amount = atof(szTmp);
                if ( pPaymentData ->h_amount >= 10000.00 || pPaymentData  ->h_amount <
0 )
                                throw new CWEBCLNT_ERR( ERR_PAYMENT_HAM_RANGE );
}

/* FUNCTION: GetOrderStatusData
 *
 * PURPOSE:    This function  extracts and validates the payment form data from an
http command string.
 *
 */
```

```
void GetOrderStatusData(LPSTR lpszQueryString, ORDER_STATUS_DATA
*pOrderStatusData)
{
                char            szTmp[26];
                char            *ptr = lpszQueryString;

                pOrderStatusData ->d_id = GetIntKeyValu e(&ptr, "DID*",
ERR_ORDERSTATUS_MISSING_DID_KEY, ERR_ORDERSTATUS_DID_INVALID);

                GetKeyValue(&ptr, "CID*", szTmp, sizeof(szTmp),
ERR_ORDERSTATUS_MISSING_CID_KEY);
                if ( szTmp[0] == 0 )
                {               // customer id is blank, so last name must be entered
                                pOrderStatus Data->c_id = 0;
                                GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR_ORDERSTATUS_MISSING_CLT_KEY);
                                if ( szTmp[0] == 0 )
                                                throw new
CWEBCLNT_ERR( ERR_ORDERSTATUS_MISSING_CID_CLT );

                                _strupr( szTmp );
                                if ( strlen(pOrderStatusData ->c_last) >
LAST_NAME_LEN )
                                                throw new
CWEBCLNT_ERR( ERR_ORDERSTATUS_CLT_RANGE );
                                strcpy(pOrderStatusData ->c_last, szTmp);
                }
                else
                {               // parse customer id and verify that last name was NOT
entered
                                if ( !IsNumeric(szTmp) )
                                                throw new
CWEBCLNT_ERR( ERR_ORDERSTATUS_CID_  INVALID );
                                pOrderStatusData ->c_id = atoi(szTmp);
                                GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR_ORDERSTATUS_MISSING_CLT_KEY);
                                if ( szTmp[0] != 0 )
                                                throw new
CWEBCLNT_ERR( ERR_ORDERSTATUS_CID_AND_CLT );
                }

}

/* FUNCTION: BOOL IsNumeric(char   *ptr)
 *
 * PURPOSE:    This function determines if a string is numeric. It fails if any
characters other
 *                                              than numeric and null terminator are
present.
 *
 * ARGUMENTS: char                                              *ptr            pointer to
string to check.
 *
 * RETURNS:                     BOOL            FALSE           if string is not a ll
numeric
 *
                TRUE            if string contains only numeric characters i.e. '0'    -
'9'
 */

BOOL IsNumeric(char *ptr)
{
                if ( *ptr == 0 )
                                return FALSE;

                while( *ptr && isdigit(*ptr) )
                                ptr++;
                return ( !*ptr );
}

/* FUNCTION: BOOL IsDecimal(char *ptr)
 *
 * PURPOSE:  This function determines if a string is a non  -negative decimal value.
 *           It fails if any characters other than a series of numbers followed by
 *                                              a decimal point, another series of
numbers, and a null terminator are present.
 *
 * ARGUMENTS: char                                              *ptr            pointer to
string to check.
 *
 * RETURNS:                     BOOL            FALSE           if string is not a valid
non-negative decimal value
 *
                TRUE            if string is OK
 */

BOOL IsDecimal(char *ptr)
{
                char *dotptr;
                BOOL  bValid;

                if ( *ptr == 0 )
                                return FALSE;

                // find decimal point
                dotptr = strchr( ptr, '.' );
                if (dotptr == NULL)
                                // no decimal point, so just check for numeric
                                return IsNumeric(ptr);
                *dotptr = 0;  // temporarily replace decimal with a terminator

                if ( *ptr != 0 )
                                bValid = IsNumeric(ptr );
                // string starts with decimal point
                else if (*(dotptr+1) == 0)
                                return FALSE;  // nothing but a decimal point is bad
                else
                                bValid = TRUE;

                if (*(dotptr+1) != 0)
                                // check text after decimal point
                                bValid &= IsNumeric(dotptr+1);

                *dotptr = '.';   // replace decimal point
                return bValid;
}
```

isapi_dll/src/tpcc.def

```
LIBRARY TPCC.DLL

EXPORTS

                GetExtensionVersion          @1
                HttpExtensionProc            @2
                TerminateExtension           @3
```

isapi_dll/src/tpcc.h

```
/*              FILE:                           TPCC.H
 *                                                              Microsoft TPC -C Kit Ver.
4.20.000
 *                                                              Copyright Microsoft, 1999
 *               All Rights Reserved
 *
 *                                                              Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
 *
 *              PURPOSE:        Header file for ISAPI TPCC.DLL, defines structures and
functions used in the isapi tpcc.dll.
 *
 */

//VERSION RESOURCE DEFINES
#define _APS_NEXT_RESOURCE_VALUE
                101
#define _APS_NEXT_COMMAND_VALUE
                40001
#define _APS_NEXT_CONTROL_VALUE
                1000
#define _APS_NEXT_SYMED_VALUE
                101

#define TP_MAX_RETRIES
                                50


//note that the welcome form must   be processed first as terminal ids assigned
here, once the
//terminal id is assigned then the forms can be processed in any order.
#define WELCOME_FORM
                1                               //beginning form no term id assigned,
form id
#define MAIN_MENU_FORM
                2                               //term id assigned  main menu form id
#define NEW_ORDER_FORM
                3                               //new order form id
#define PAYMENT_FORM
                4                               //payment form id
#define DELIVERY_FORM
                5                               //delivery form id
#define ORDER_STATUS_FORM
                6                               //order status id
#define STOCK_LEVEL_FORM
                7                               //stock  level form id

//This macro is used to prevent the compiler error unused formal parameter
#define UNUSEDPARAM(x) (x = x)


//This structure defines the data necessary to keep distinct for each terminal or
client connection.
typedef struct _CLIENTDATA
{
                int                                             iNextFree;
                                //index of next free element or   -1 if this entry in
use.
                int                                             w_id;
                                //warehouse id assigned at welcome form
                int                                             d_id;
                                //district id assigned at welcome form

                int                                             iSyncId;
                                //syncronization id
                int                                             iTickCount;
                                //time of last access;

                CTPCC_BASE      *pTxn;

} CLIENTDATA, *PCLIENTDATA;


//This structure is used to define the operational interface for terminal id
support
typedef struct _TERM
{
                int                                             iNumEntries;
                                //total allocated terminal array entries
                int                                             iFreeList;
                                                                //next available terminal
array element or  -1 if none
                int                                             iMasterSyncId;
                                                                //syncronization id
                CLIENTDATA      *pClientData;
                                //pointer to allocated client data
} TERM;

typedef TERM *PTERM;
                                //pointer to terminal structure type


                enum WEBERROR
                {
                                NO_ERR,
                                ERR_COMMAND_UNDEFINED,
                                ERR_D_ID_INVALID,
                                ERR_DELIVERY_CARRIER_ID_RANGE,
                                ERR_DELIVERY_CARRIER_INVALID,
                                ERR_DELIVERY_MISSING_OCD_KEY,
                                ERR_DELIVERY_THREAD_FAILED,
                                ERR_GETPROCADDR_FAILED,
                                ERR_HTML_ILL_FORMED,
                                ERR_INVALID_SYNC_CONNECTION,
                                ERR_INVALID_TERMID,
                                ERR_LOADDLL_FAILED,
                                ERR_MAX_CONNECTIONS_EXCEEDED,
                                ERR_MEM_ALLOC_FAILED,
                                ERR_MISSING_REGISTRY_ENTRIES,
                                ERR_NEWORDER_CUSTOMER_INVALID,
                                ERR_NEWORDER_CUSTOMER_KEY,
                                ERR_NEWORDER_DISTRICT_INVALID,
                                ERR_NEWORDE R_FORM_MISSING_DID,
                                ERR_NEWORDER_ITEMID_INVALID,
                                ERR_NEWORDER_ITEMID_RANGE,
                                ERR_NEWORDER_ITEMID_WITHOUT_SUPPW,
                                ERR_NEWORDER_MISSING_IID_KEY,
                                ERR_NEWORDER_MISSING_QTY_KEY,
                                ERR_NEWORDER_MISSING_SUPPW_KEY,
                                ERR_NEWORDER_NOITEMS_ENTERED,
                                ERR_NEWORDER_QTY_INVALID,
                                ERR_NEWORDER_QTY_RANGE,
                                ERR_NEWORDER_QTY_WITHOUT_SUPPW,
                                ERR_NEWORDER_SUPPW_INVALID,
                                ERR_NO_SERVER_SPECIFIED,
                                ERR_ORDERSTATUS_CID_AND_CLT,
                                ERR_ORDERSTATUS_CID_INVALID,
                                ERR_ORDERSTATUS_CLT_RANGE,
                                ERR_ORDERSTATUS_DID_INVALID  ,
                                ERR_ORDERSTATUS_MISSING_CID_CLT,
                                ERR_ORDERSTATUS_MISSING_CID_KEY,
                                ERR_ORDERSTATUS_MISSING_CLT_KEY,
                                ERR_ORDERSTATUS_MISSING_DID_KEY,
                                ERR_PAYMENT_CDI_INVALID,
                                ERR_PAYMENT_CID_AND_CLT,
                                ERR_PAYMENT_CUSTOMER_INVALID,
                                ERR_PAYMENT_CWI_INVALID,
                                ERR_PAYMENT_DISTRICT_INVALID,
                                ERR_PAYMENT_HAM_INVALID,
                                ERR_PAYMENT_HAM_RANGE,
                                ERR_PAYMENT_LAST_NAME_TO_LONG,
                                ERR_PAYMENT_MISSING_CDI_KEY,
                                ERR_PAYMENT_MISSING_CID_CLT,
                                ERR_PAYMENT_MISSING_CID_KEY,
                                ERR_PAYMENT_MISSING_CLT,
                                ERR_PAYMENT_MISSIN G_CLT_KEY,
                                ERR_PAYMENT_MISSING_CWI_KEY,
                                ERR_PAYMENT_MISSING_DID_KEY,
                                ERR_PAYMENT_MISSING_HAM_KEY,
                                ERR_STOCKLEVEL_MISSING_THRESHOLD_KEY,
                                ERR_STOCKLEVEL_THRESHOLD_INVALID,
                                ERR_STOCKLEVEL_THRESHOLD_RANGE,
                                ERR_VERSION_MISMATCH,
                                ERR_W_ID_INVALID
                };

class CWEBCLNT_ERR : public CBaseErr
{
                public:

                                CWEBCLNT_ERR(WEBERROR Err)
                                {
                                                m_Error = Err;
                                                m_szTextDetail = NULL;
                                                m_SystemErr = 0;
                                                m_szErrorText = NULL;
                                };

                                CWEBCLNT_ERR(WEBERROR Err, char *szTextDetail, DWORD
dwSystemErr)
                                {
                                                m_Error = Err;
                                                m_szTextDetail = new
char[strlen(szTextDetail)+1];
                                                strcpy( m_szTextDetail, szTextDetail );
                                                m_SystemErr = dwSystemErr;
                                                m_szErrorText = NULL;
                                };

                                ~CWEBCLNT_ERR()
                                {
                                                if (m_szTextDetail != NULL)
                                                                delete [] m_szTextDetail ;
                                                if (m_szErrorText != NULL)
                                                                delete [] m_szErrorText;
                                };

                                WEBERROR        m_Error;
                                char                            *m_szTextDetail;
                //
```

```
                    char                        *m_szErrorText;
                    DWORD                       m_SystemErr;

                    int ErrorType() {return ERR_TYPE_WEBDLL;};
                    int ErrorNum() {return m_Error;};
                    char *ErrorText();

};

//These constants have already been defined in engstut.h, but since we do
//not want to include it in the delisrv executable
#define     TXN_EVENT_START                 2
#define     TXN_EVENT_STOP                  4
#define TXN_EVENT_WARNING   6               //used to record a warning
into the log

//function prototypes

BOOL APIENTRY DllMain(HANDLE hModule, DWORD ul_reason_for_call, LPVOID
lpReserved);
void WriteMessageToEventLog(LPTSTR lpszMsg);
void ProcessQueryString(EXTENSION_CONTROL_BLOCK *pECB, int *pCmd, int *pFormId,
int *pTermId, int  *pSyncId);
void WelcomeForm(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void SubmitCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void BeginCmd(EXTENSION_CONTROL_BLOCK *pECB, int iFormId, int iTermId);
void ProcessCmd(EXTENSION_CONTROL_BLOCK *pECB  , int iFormId, int iTermId);
void StatsCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void ErrorMessage(EXTENSION_CONTROL_BLOCK *pECB, int iError, int iErrorType, char
*szMsg, int iTermId);
void GetKeyValue(char **pQueryString, char *pKey, char *pValu   e, int iMax,
WEBERROR err);
int  GetIntKeyValue(char **pQueryString, char *pKey, WEBERROR NoKeyErr, WEBERROR
NotIntErr);
void TermInit(void);
void TermDeleteAll(void);
int  TermAdd(void);
void TermDelete(int id);
void ErrorForm(EXTENSION_CONTROL_BLOCK *pEC  B, int iType, int iErrorNum, int
iTermId, int iSyncId, char *szErrorText, char *szBuffer );
void MakeMainMenuForm(int iTermId, int iSyncId, char *szForm);
void MakeStockLevelForm(int iTermId, STOCK_LEVEL_DATA *pStockLevelData, BOOL
bInput, char *szForm);
void MakeNewOrderForm(int iTermId, NEW_ORDER_DATA *pNewOrderData, BOOL bInput,
char *szForm);
void MakePaymentForm(int iTermId, PAYMENT_DATA *pPaymentData, BOOL bInput, char
*szForm);
void MakeOrderStatusForm(int iTermId, ORDER_STATUS_DATA *pOrderStatusData    , BOOL
bInput, char *szForm);
void MakeDeliveryForm(int iTermId, DELIVERY_DATA *pDeliveryData, BOOL bInput,
char *szForm);
void ProcessNewOrderForm(EXTENSION_CONTROL_BLOCK          *pECB, int iTermId, char
*szBuffer);
void ProcessPaymentForm(EXTENSION_CONTROL_BLOCK    *pECB, int iTermId, char
*szBuffer);
void ProcessOrderStatusForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char
*szBuffer);
void ProcessDeliveryForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char
*szBuffer);
void ProcessStockLevelForm(EXTENSION_CONTRO  L_BLOCK *pECB, int iTermId, char
*szBuffer);
void GetNewOrderData(LPSTR lpszQueryString, NEW_ORDER_DATA *pNewOrderData);
void GetPaymentData(LPSTR lpszQueryString, PAYMENT_DATA *pPaymentData);
void GetOrderStatusData(LPSTR lpszQueryString, ORDER_STATUS_DAT   A
*pOrderStatusData);
BOOL PostDeliveryInfo(short w_id, short o_carrier_id);
BOOL IsNumeric(char *ptr);
BOOL IsDecimal(char *ptr);
void DeliveryWorkerThread(void *ptr);
```

isapi_dll/src/tpcc.rc

```
//Microsoft Developer Studio generated resource script.
//
#include "resource.h"

#define APSTUDIO_READONLY_SYMBOLS
//////////////////////////////////////////////////////////////////////////////
//
// Generated from the TEXTINCLUDE 2 resource.
//
#include "afxres.h"

//////////////////////////////////////////////////  //////////////////////
#undef APSTUDIO_READONLY_SYMBOLS

//////////////////////////////////////////////////////////////////////////////
// English (U.S.) resources

#if !defined(AFX_RESOURCE_DLL) || defined(AFX_TARG_ENU)
#ifdef _WIN32
LANGUAGE LANG_ENGLIS H, SUBLANG_ENGLISH_US
#pragma code_page(1252)
#endif //_WIN32

#ifndef _MAC
////////////////////////////////////////////////////////////////////////////
//
// Version
//

VS_VERSION_INFO VERSIONINFO
 FILEVERSION 0,4,0,0
 PRODUCTVERSION 0,4,0,0
 FILEFLAGSM ASK 0x3fL
#ifdef _DEBUG
 FILEFLAGS 0x1L
#else
 FILEFLAGS 0x0L
#endif
 FILEOS 0x40004L
 FILETYPE 0x2L
 FILESUBTYPE 0x0L
BEGIN
    BLOCK "StringFileInfo"
    BEGIN
        BLOCK "040904b0"
        BEGIN
            VALUE "Comments", "TPC  -C HTML DLL Server (D BLIB)\0"
            VALUE "CompanyName", "Microsoft  \0"
            VALUE "FileDescription", "TPC  -C HTML DLL Server (DBLIB) \0"
            VALUE "FileVersion", "0, 4, 0, 0  \0"
            VALUE "InternalName", "tpcc  \0"
            VALUE "LegalCopyright", "C  opyright © 1997 \0"
            VALUE "OriginalFilename", "tpcc.dll  \0"
            VALUE "ProductName", "Microsoft tpcc  \0"
            VALUE "ProductVersion", "0, 4, 0, 0  \0"
        END
    END
    BLOCK "VarFileInfo"
    BEGIN
        VALUE "Translation",  0x409, 1200
    END
END

#endif    // !_MAC


#ifdef APSTUDIO_INVOKED
//////////////////////////////////////////////////////////////////////////////
//
// TEXTINCLUDE
//

1 TEXTINCLUDE DISCARDABLE
BEGIN
    "resource.h \0"
END

2 TEXTINCLUDE DISCARDABLE
BEGIN
    "#include ""afxres.h""  \r\n"
    "\0"
END

3 TEXTINCLUDE DISCARDABLE
BEGIN
    "\r\n"
    "\0"
END

#endif    // APSTUDIO_INVOKED


//////////////////////////////////////////////////////////////////////////////
//
// Dialog
//

IDD_DIALOG1 DIALOG DI SCARDABLE  0, 0, 186, 95
STYLE DS_MODALFRAME | WS_POPUP | WS_CAPTION | WS_SYSMENU
CAPTION "Dialog"
FONT 8, "MS Sans Serif"
BEGIN
    DEFPUSHBUTTON    "OK",IDOK,129,7,50,14
    PUSHBUTTON       "Cancel",IDCANCEL,129,24,50,14
END


////////////////////////////// //////////////////////////////////////////////
//
// DESIGNINFO
//

#ifdef APSTUDIO_INVOKED
GUIDELINES DESIGNINFO DISCARDABLE
BEGIN
    IDD_DIALOG1, DIALOG
    BEGIN
        LEFTMARGIN, 7
        RIGHTMARGIN, 179
        TOPMARGIN, 7
        BOTTOMMARG IN, 88
    END
END
#endif    // APSTUDIO_INVOKED

#endif    // English (U.S.) resources
//////////////////////////////////////////////////////////////////////////////



#ifndef APSTUDIO_INVOKED
////////////////////////////////////////////////////////////////////  ///////////////
//
// Generated from the TEXTINCLUDE 3 resource.
//


//////////////////////////////////////////////////////////////////////////////
#endif    // not APSTUDIO_INVOKED
```

tm_com_dll/tm_com_dll.dsp

```
# Microsoft Developer Studio Project File   - Name="tm_com_dll"  - Package Owner=<4>
# Microsoft Developer Studio Generated Build File, Format Version 6.00
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Dynamic  -Link Library" 0x0102

CFG=tm_com_dll  - Win32 Debug
!MESSAGE This is not a valid makefile. To bui  ld this project using NMAKE,
!MESSAGE use the Export Makefile command and run
!MESSAGE
!MESSAGE NMAKE /f "tm_com_dll.mak".
!MESSAGE
!MESSAGE You can specify a configuration when running NMAKE
!MESSAGE by defining the macro CFG on the command line. For ex   ample:
!MESSAGE
!MESSAGE NMAKE /f "tm_com_dll.mak" CFG="tm_com_dll    - Win32 Debug"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "tm_com_dll  - Win32 Release" (based on "Win32 (x86) Dynamic  -Link
Library")
!MESSAGE "tm_com_dll  - Win32 Debug" (based on "Win32 (x86) Dynamic  -Link Library")
!MESSAGE

# Begin Project
# PROP AllowPerConfigDependencies 0
# PROP Scc_ProjName ""
# PROP Scc_LocalPath ""
CPP=cl.exe
MTL=midl.exe
RSC=rc.exe

!IF  "$(CFG)" == "tm_com_dll  - Win32 Release"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX
/FD /c
# ADD CPP /nologo /MD /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /FD /c
# ADD BASE MTL /nologo /D "NDEBUG" /mk  typlib203 /o "NUL" /win32
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel3 2.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib

odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
/out:". \bin/tpcc_com.dll"

!ELSEIF  "$(CFG)" == "tm_com_dll  - Win32 Debug"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Librarie s 1
# PROP BASE Output_Dir "Debug"
# PROP BASE Intermediate_Dir "Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD CPP /nologo /MDd /W3 /Gm /GX /ZI /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS"
/YX /FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL / nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.l   ib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/pdbtype:sept
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shel l32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib

odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/out:". \bin/tpcc_com.dll" /pdbtype:sept

!ENDIF

# Begin Target
```

```
# Name "tm_com_dll  - Win32 Release"
# Name "tm_com_dll  - Win32 Debug"
# Begin Source File

SOURCE=.\src\tpcc_com.cpp
# End Source File
# Begin Source File

SOURCE=.\src\tpcc_com.h
# End Source File
# End Target
# End Project
```

tm_com_dll/src/tpcc_com.cpp

```
/*            FILE:                         TPCC_COM.CPP
 *                                                      Microsoft TPC-C Kit Ver.
4.20.000
 *                                                      Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                                      not yet audited
 *
 *            PURPOSE:      Source file for TPC-C COM+ class implementation.
 *            Contact:      Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                          4.20.000 - first version
 */

// needed for CoinitializeEx
#define _WIN32_WINNT 0x0400

#include <windows.h>

// need to declare functions for export
#define DllDecl  __declspec( dllexport )

#include "..\..\common\src\trans.h"                     //tpckit transaction header
contains definations of struct ures specific to TPC-C
#include "..\..\common\src\error.h"
#include "..\..\common\src\txn_base.h"
#include "tpcc_com.h"

#include "..\..\tpcc_com_ps\src\tpcc_com_ps_i.c"
#include "..\..\tpcc_com_all\src\tpcc_com_all_i.c"

// wrapper routine for class const ructor
__declspec(dllexport) CTPCC_COM* CTPCC_COM_new(BOOL bSinglePool)
{
            return new CTPCC_COM(bSinglePool);
}

CTPCC_COM::CTPCC_COM(BOOL bSinglePool)
{
            HRESULT hr = NULL;
            long lRet = 0;
            ULONG ulTmpSize = 0;

            m_pTxn                                  = NULL;
            m_pNewOrder             = NULL;
            m_pPayment              = NULL;
            m_pStockLevel = NULL;
            m_pOrderStatus          = NULL;

            m_bSinglePool = bSinglePool;

            ulTmpSize = (ULONG) sizeof(COM_DATA);
            VariantInit(&m_vTxn);
            m_vTxn.vt = VT_SAFEARRAY;

            m_vTxn.parray = SafeArrayCreateVector(VT_UI1, ulTmpSize, ulTmpSize)   ;
            if (!m_vTxn.parray)
                        throw new CCOMERR( E_FAIL );

            memset((void*)m_vTxn.parray ->pvData,0,ulTmpSize);
            m_pTxn = (COM_DATA*)m_vTxn.parray  ->pvData;

            hr = CoInitializeEx(NULL, COINIT_MULTITHREADED);
            if (FAILED(hr))
            {
                        throw new CCOMERR( hr );
            }

            // create components
            if (m_bSinglePool)
            {
                        hr = CoCreateInstance(CLSID_TPCC, NULL, CLSCTX_SERVER,
IID_ITPCC, (void **)&m_pNewOrder);
                        if (FAILED(hr))
                                    throw new CCOMERR(hr);

                        // all txns will use same component
                        m_pPayment = m_pNewOrder;
                        m_pStockLevel = m_pNewOrder;
                        m_pOrderStatus = m_pNewOrder;
            }
            else
            {
                        // use different components for each txn

                        hr = CoCreateInstance(CLSID_NewOrder, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pNewOrder);
                        if (FAILED(hr))
                                    throw new CCOMERR(hr);

                        hr = CoCreateInstance(CLSID_Payment, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pPayment);
                        if (FAILED(hr))
                                    throw new CCOMERR(hr);

                        hr = CoCreateInstance(CLSID_StockLevel, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pStockLevel);
                        if (FAILED(hr))
                                    throw new CCOMERR(hr);

                        hr = CoCreateInstance(CLSID_OrderStatus, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pOrderStatus);
                        if (FAILED(hr))
                                    throw new CCOMERR(hr);
            }

            // call setcomplete to release each component back into pool
            hr = m_pNewOrder ->CallSetComplete();
            if (FAILED(hr))
                        throw new CCOMERR(hr);

            if (!m_bSinglePool)
            {
                        hr = m_pPayment ->CallSetComplete();
                        if (FAILED(hr))
                                    throw new CCOMERR(hr);

                        hr = m_pStockLevel ->CallSetComplete();
                        if (FAILED(hr))
                                    throw new CCOMERR(hr);

                        hr = m_pOrderStatus ->CallSetComplete();
                        if (FAILED(hr))
                                    throw new CCOMERR(hr);
            }
}

CTPCC_COM::~CTPCC_COM()
{
            if (m_pTxn)
                        SafeArrayDestroy(m_vTxn.parray);

            ReleaseInterface(m_pNewOrder);
            if (!m_bSinglePool)
            {
                        ReleaseInterface(m_pPayment);
                        ReleaseInterface(m_pStockLevel);
                        ReleaseInterface(m_pOrderStatus);
            }
            CoUninitialize();
}

void CTPCC_COM::NewOrder()
{
            VARIANT   vTxn_out;

            HRESULT hr = m_pNewOrder ->NewOrder(m_vTxn, &vTxn_out);
            if (FAILED(hr))
                        throw new CCOMERR( hr );
            memcpy(m_pTxn,  (void *)vTxn_out.parray ->pvData,vTxn_out.parray -
>rgsabound[0].cElements);
            SafeArrayDestroy(vTxn_out.parray);

            if ( m_pTxn ->ErrorType != ERR_SUCCESS )
                        throw new CCOMERR( m_pTxn ->ErrorType, m_pTxn ->error );
}

void CTPCC_COM::Payment()
{
            VARIANT   vTxn_out;

            HRESULT hr = m_pPayment ->Payment(m_vTxn, &vTxn_out);
            if (FAILED(hr))
                        throw new CCOMERR( hr );
            memcpy(m_pTxn, (void *)vTxn_out.parray  ->pvData,vTxn_out.parray -
>rgsabound[0].cElements);
            SafeArrayDestroy(vTxn_out.parray);

            if ( m_pTxn ->ErrorType  != ERR_SUCCESS )
                        throw new CCOMERR( m_pTxn ->ErrorType, m_pTxn ->error );
}

void CTPCC_COM::StockLevel()
{
            VARIANT   vTxn_out;

            HRESULT hr = m_pStockLevel ->StockLevel(m_vTxn, &vTxn_out);
            if (FAILED(hr))
                        throw new CCOMERR( hr );
            memcpy(m_pTxn, (void  *)vTxn_out.parray ->pvData,vTxn_out.parray -
>rgsabound[0].cElements);
            SafeArrayDestroy(vTxn_out.parray);

            if ( m_pTxn ->ErrorType != ERR_SUCCESS )
                        throw new CCOMERR( m_pTxn ->ErrorType, m_pTxn ->error );
}

void CTPCC_COM::OrderStatus()
{
            VARIANT   vTxn_ou t;

            HRESULT hr = m_pOrderStatus ->OrderStatus(m_vTxn, &vTxn_out);
            if (FAILED(hr))
                        throw new CCOMERR( hr );
            memcpy(m_pTxn, (void *)vTxn_out.parray  ->pvData,vTxn_out.parray -
>rgsabound[0].cElements);
            SafeArrayDestroy(vTxn_out.parray);

            if ( m_pTxn ->ErrorType != ERR_SUCCESS )
                        throw new CCOMERR( m_pTxn ->ErrorType, m_pTxn ->error );
}
```

tm_com_dll/src/tpcc_com.h

```
/*            FILE:                         TPCC_COM.H
 *                                                      Microsoft TPC-C Kit Ver.
4.20.000
 *                                                      Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                                      not yet audited
 *
 *            PURPOSE:      Header file for TPC-C COM+ class implementation.
 *
 *  Change history:
 *                          4.20.000 - first version
 */

#pragma once

#include <stdio.h>
#include "..\..\tpcc_com_ps\src\tpcc_com_ps.h"

// need to declare functions for import, unless   define has already been created
// by the DLL's .cpp module for export.
#ifndef DllDecl
#define DllDecl  __declspec( dllimport )
#endif

class CCOMERR : public CBaseErr
{
            private:
                        char m_szErrorText[64];

            public:
                        // use this interface for genuine COM   errors
                        CCOMERR( HRESULT hr )
                        {
                                    m_hr = hr;
                                    m_iErrorType = 0;
                                    m_iError = 0;
                        }

                        // use this interface to impersonate a non  -COM error
type
                        CCOMERR( int iErrorType, int iError )
                        {
                                    m_iErrorType = iErrorType;
                                    m_iError = iError;
                                    m_hr = S_OK;
                        }

                        int                         m_hr;
                        int                         m_iErrorType;
                        int                         m_iError;

                        // A CCOMERR class can impersonate another class,
which happens if the error
                        // was not actually a COM Services error, but was
simply transmitted back via COM.
                        int ErrorType()
                        {
                                    if (m_iErrorType == 0)
                                                return ERR_TYPE_COM;
                                    else
                                                return m_iErrorType;
                        }

                        int ErrorNum() {return m_hr;}

                        char *ErrorText()
                        {
                                    if (m_hr == S_OK)
                                                sprintf( m_szErrorText,
"Error: Class %d, error # %d", m_iErrorType, m_iError );
                                    else
                                                sprintf( m_szErrorText,
"Error: COM HRESULT %x", m_hr );
                                    return m_szErrorText;
                        }
};

class DllDecl CTPCC_COM : public CTPCC_BASE
{
            private:
                        BOOL m_bSinglePool;

                        // COM Interface pointers
                        ITPCC*                                                  m_pNewOrder;
                        ITPCC*                                                  m_pPayment;
                        ITPCC*
            m_pStockLevel;
                        ITPCC*
            m_pOrderStatus;

                        struct COM_DATA
                        {
                                    int ErrorType;
                                    int error;
                                    union
                                    {
                                                NEW_ORDER_DATA
            NewOrder;
                                                PAYMENT_DATA
```

```
                Payment;
                                                        DELIVERY_DATA
                Delivery;
                                                        STOCK_LEVEL_DATA
                StockLevel;
                                                        ORDER_STATUS_D ATA
                OrderStatus;
                                        } u;
                        } *m_pTxn;

                        VARIANT m_vTxn;
                public:
                        CTPCC_COM(BOOL bSinglePool);
                        ~CTPCC_COM(void);

                        inline PNEW_ORDER_DATA
                BuffAddr_NewOrder()                     { return &m_pTxn -
>u.NewOrder;    };
                        inline PPAYMENT_DATA
                BuffAddr_Payment()                      { return &m _pTxn-
>u.Payment;     };
                        inline PDELIVERY_DATA
                BuffAddr_Delivery()                     { return &m_pTxn -
>u.Delivery;    };
                        inline PSTOCK_LEVEL_DATA        BuffAddr_StockLevel()
                { return &m_pTxn ->u.StockLevel;  };
                        inline PORDER_STATUS_DATA       BuffAddr_OrderStatus()
                { return &m_p Txn->u.OrderStatus; };

                        void NewOrder                   ();
                        void Payment                    ();
                        void StockLevel                                 ();
                        void OrderStatus                ();
                        void Delivery                   () { throw new
CCOMERR(E_NOTIMPL); }  // not supported
};


inline void ReleaseInterface(IUnknown *pUnk)
{
                if (pUnk)
                {
                        pUnk->Release();
                        pUnk = NULL;
                }
}


// wrapper routine for class constructor
extern "C" __declspec(dllexport) CTPCC_COM* CTPCC_COM_new(BOOL);

typedef CTPCC_COM* (TYPE_CTPCC_COM)(BOOL);
```

tpcc_com_all/tpcc_com_all.dsp

```
# Microsoft Developer Studio Project File   - Name="tpcc_com_all"  - Package
Owner=<4>
# Microsoft Developer Studio Generated Build File, Format Version 6.00
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Dynamic -Link Library" 0x0102

CFG=tpcc_com_all - Win32 Debug
!MESSAGE This is not a valid makefil e. To build this project using NMAKE,
!MESSAGE use the Export Makefile command and run
!MESSAGE
!MESSAGE NMAKE /f "tpcc_com_all.mak".
!MESSAGE
!MESSAGE You can specify a configuration when running NMAKE
!MESSAGE by defining the macro CFG on the command l  ine. For example:
!MESSAGE
!MESSAGE NMAKE /f "tpcc_com_all.mak" CFG="tpcc_com_all    - Win32 Debug"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "tpcc_com_all  - Win32 Release" (based on "Win32 (x86) Dynamic  -Link
Library")
!MESSAGE "tpcc_com_all  - Win32 Debug" (based on "Win32 (x86) Dynamic  -Link
Library")
!MESSAGE

# Begin Project
# PROP AllowPerConfigDependencies 0
# PROP Scc_ProjName ""
# PROP Scc_LocalPath ""
CPP=cl.exe
MTL=midl.exe
RSC=rc.exe

!IF  "$(CFG)" == "tpcc_com_al l - Win32 Release"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX
/FD /c
# ADD CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /FD /c
# ADD BASE MTL /n ologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
# ADD LINK32 .. \db_dblib_dll \bin\tpcc_dblib.lib .. \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 odbccp32.lib
/nologo /subsystem:windows /dll /machine:I386

!ELSEIF  "$(CFG)" == "tpcc_com_all   - Win32 Debug"

# 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
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_D ir ".\obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD CPP /nologo /MTd /W3 /Gm /GX /ZI /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS"
/YX /FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.e xe
# 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 odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/pdbtype:sept
# ADD LINK32 .. \db_dblib_dll \bin\tpcc_dblib.lib .. \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 odbccp32.lib
/nologo /subsystem:windows /dll /debug /machine:I386

/pdbtype:sept

!ENDIF

# Begin Target

# Name "tpcc_com_all  - Win32 Release"
# Name "tpcc_com_all  - Win32 Debug"
# Begin Group "Source"

# PROP Default_Filter "*.cpp, *.c"
# Begin Source File

SOURCE=. \src\tpcc_com_all.cpp
# SUBTRACT CPP /YX
# End Source Fi le
# Begin Source File

SOURCE=. \src\tpcc_com_all.def
# End Source File
# Begin Source File

SOURCE=. \src\tpcc_com_all.idl

!IF  "$(CFG)" == "tpcc_com_all  - Win32 Release"

# PROP Ignore_Default_Tool 1
# Begin Custom Build  - Performing MIDL step
InputPath=. \src\tpcc_com_all.idl

BuildCmds= \
                midl /Oicf /h "tpcc_com_all.h" /iid "tpcc_com_all_i.c"
".\src\tpcc_com_all.idl"   /out ". \src"

".\src\tpcc_com_all.tlb" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_all.h" : $(SOURCE) "$(I NTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_all_i.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)
# End Custom Build

!ELSEIF  "$(CFG)" == "tpcc_com_all   - Win32 Debug"

# PROP Ignore_Default_Tool 1
# Begin Custom Build  - Performing MIDL ste p
InputPath=. \src\tpcc_com_all.idl

BuildCmds= \
                midl /Oicf /h "tpcc_com_all.h" /iid "tpcc_com_all_i.c"
".\src\tpcc_com_all.idl"   /out ". \src"

".\src\tpcc_com_all.tlb" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_all.h" : $( SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_all_i.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)
# End Custom Build

!ENDIF

# End Source File
# End Group
# Begin Group "Header"

# PROP Default_Filter "*.h"
# Begin Source File

SOURCE=. \src\Methods.h
# End Source File
# Begin Source File

SOURCE=. \src\resource.h
# End Source File
# End Group
# Begin Group "Source"

SOURCE=. \src\tpcc_com_all.rc
# End Source File
# End Target
# End Project
```

tpcc_com_all/src/Methods.h

```
/*              FILE:                           METHODS.H
 *                                                              Microsoft TPC -C Kit Ver.
4.20.000
 *                                                              Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                                              not yet audited
 *
 *              PURPOSE:        Header file for COM components.
 *
 *  Change history:
 *                              4.20.000 - first version
 */


enum COMPONEN T_ERROR
{
                ERR_MISSING_REGISTRY_ENTRIES = 1,
                ERR_LOADDLL_FAILED,
                ERR_GETPROCADDR_FAILED,
                ERR_UNKNOWN_DB_PROTOCOL
};

class CCOMPONENT_ERR : public CBaseErr
{
                public:
                                CCOMPONENT_ERR(COMPONENT_ERROR Err)
                                {
                                                m_Error = Err;
                                                m_szTextDetail = NULL;
                                                m_SystemErr = 0;
                                                m_szErrorText = NULL;
                                };
                                CCOMPONENT_ERR(COMPONENT_ERROR Err, char *szTextDetail,
DWORD dwSystemErr)
                                {
                                                m_Error = Err;
                                                m_szTextDetail = new
char[strlen(szTextDetail)+1];
                                                strcpy( m_szTextDetail, szTextDetail );
                                                m_SystemErr = dwSystemErr;
                                                m_szErrorText = NULL;
                                };

                                ~CCOMPONENT_ERR()
                                {
                                                if (m_szTextDetail != NULL)
                                                                delete [] m_szTextDetail;
                                                if (m_szErrorText != NULL)
                                                                delete [] m_szErrorText;
                                };

                                COMPONENT_ERROR             m_Error;
                                char
                *m_szTextDetail;
                                char
                *m_szErrorText;
                                DWORD                                                   m_SystemErr;

                                int ErrorType() {return ERR_TYPE_COMPONENT;};
                                int ErrorNum() {return m_Error;};
                                char *ErrorText();
};


static void WriteMessageToEventLog(LPTSTR lpszMsg);


////////////////////////////////////////  ////////////////////////////////
// CTPCC_Common
class CTPCC_Common :
```

```
                public ITPCC,
                public IObjectControl,
                public IObjectConstruct,
                public CComObjectRootEx<CComSingleThreadModel>
{
public:
BEGIN_COM_MAP(CTPCC_Common)
                COM_INTERFACE_ENTRY(ITPCC)
                COM_INTERFACE_ENTRY(IObjectControl)
                COM_INTERFACE_ENTRY(IObjectConstruct)
END_COM_MAP()

                CTPCC_Common();
                ~CTPCC_Common();

// ITPCC
public:
                HRESULT __stdcall NewOrder(             VARIANT txn_in, VARIANT*
txn_out);
                HRESULT __stdcall Payment(              VARIANT txn_in, VARIANT *
txn_out);
                HRESULT __stdcall Delivery(             VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
                HRESULT __stdcall StockLevel(           VARIANT txn_in, VARIANT*
txn_out);
                HRESULT __stdcall OrderStatus(          VARIANT txn_in, VARIANT*
txn_out);

                HRESULT __stdcall CallSet Complete();

// IObjectControl
                STDMETHODIMP_(BOOL) CanBePooled() { return m_bCanBePooled; }
                STDMETHODIMP Activate() { return S_OK; }   // we don't support COM
Services transactions (no enlistment)
                STDMETHODIMP_(void) Deactivate() { /* nothing to do */ }

// IObjectConstruct
                STDMETHODIMP Construct(IDispatch * pUnk);

                // helper methods
private:
                BOOL                    m_bCanBePooled;
                CTPCC_BASE      *m_pTxn;

                struct COM_DATA
                {
                        int retval;
                        int error;
                        union
                        {
                                NEW_ORDER_DATA
                NewOrder;
                                PAYMENT_DATA            Payment;
                                DELIVERY_DATA           Delivery;
                                STOCK_LEVEL_DATA        StockLevel;
                                ORDER_STATUS_DATA       OrderStatus;
                        } u;
                };

};

////////////////////////////////////////////////////////////////////////////
// CTPCC
class CTPCC :
                public CTPCC_Common,
                public CComCoClass<CTPCC,  &CLSID_TPCC>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_TPCC)

BEGIN_COM_MAP(CTPCC)
                COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
                COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

};


////////////////////////////////////////////////////////  ///////////////
// CNewOrder
class CNewOrder :
                public CTPCC_Common,
                public CComCoClass<CNewOrder, &CLSID_NewOrder>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_NEWORDER)

BEGIN_COM_MAP(CNewOrder)
                COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
                COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
//              HRESULT __stdcall NewOrder(             VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
                HRESULT __stdcall Payment(              VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
                HRESULT __stdcall Stock Level(          VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
                HRESULT __stdcall OrderStatus(          VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
};


                ////////////////////////////////////////////////////////////////
/////////
// COrderStatus
class COrderStatus :
                public CTPCC_Common,
                public CComCoClass<COrderStatus, &CLSID_OrderStatus>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_ORDERSTATUS)

BEGIN_COM_MAP(COrderStatus)
                COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
                COM_INTERFACE_ENTRY_CHAIN(CTPCC_ Common)
END_COM_MAP()

// ITPCC
public:
                HRESULT __stdcall NewOrder(             VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
                HRESULT __stdcall Payment(              VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
                HRESULT __stdcall StockLevel(           VARIANT txn_in, VA RIANT*
txn_out) {return E_NOTIMPL;}
//              HRESULT __stdcall OrderStatus(          VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
};


////////////////////////////////////////////////////////////////////////////
// CPayment
class CPayment :
                public CTPCC_Commo n,
                public CComCoClass<CPayment, &CLSID_Payment>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_PAYMENT)

BEGIN_COM_MAP(CPayment)
                COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
                COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
                HRESULT __stdcall NewOrder(             VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
//              HRESULT __stdcall Payment(              VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
                HRESULT __stdcall StockLevel(           VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
                HRESULT __stdcall OrderStatus(          VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
};


////////////////////////////////////////////////////////////////////////////
// CStockLevel
class CStockLevel :
                public CTPCC_Common,
                public CComCoClass<CStockLevel, &CLSID  _StockLevel>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_STOCKLEVEL)

BEGIN_COM_MAP(CStockLevel)
                COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
                COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
                HRESULT __stdcall NewOrder(             VARIANT  txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
                HRESULT __stdcall Payment(              VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
//              HRESULT __stdcall StockLevel(           VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
                HRESULT __stdcall OrderStatus(          VARIANT  txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
};
```

tpcc_com_all/src/resource.h

```
//{{NO_DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by tpcc_com_all.rc
//
#define IDS_PROJNAME                    100
#define IDR_TPCC                         101
#define IDR_NEWORDER                    102
#define IDR_ORDERSTATUS                 103
#define IDR_PAYMENT                     104
#define IDR_STOCKLEVEL                  105

// Next default values for new objects
//
#ifdef APSTUDIO_INVO KED
#ifndef APSTUDIO_READONLY_SYMBOLS
#define _APS_NEXT_RESOURCE_VALUE        202
#define _APS_NEXT_COMMAND_VALUE         32768
#define _APS_NEXT_CONTROL_VALUE         201
#define _APS_NEXT_SYMED_VALUE           106
#endif
#endif
```

tpcc_com_all/src/tpcc_com_all.cpp

```
/*              FILE:                           TPCC_COM_ALL.CPP
 *                                                              Microsoft TPC -C Kit Ver.
4.20.000
 *                                                              Copyright Microsoft, 1999
 *               All Rights Reserved
 *
 *                                                              Version 4.10.000 audited by
Richard Gimarc, Performance Metrics, 3/17/99
 *
 *              PURPOSE:        Implementation  for TPC-C Tuxedo class.
 *              Contact:        Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                              4.20.000  - updated rev number to match kit
 */

#define STRICT
#define _WIN32_WINNT 0x0400
#define _ATL_APARTMENT_THREADED

#include <stdio.h>
#include <a tlbase.h>
//You may derive a class from CComModule and use it if you want to override
//something, but do not change the name of _Module
extern CComModule _Module;

#include <atlcom.h>
#include <initguid.h>
#include <transact.h>
#include <atlimpl.cpp>
#include <comsvcs.h>

#include <sqltypes.h>
#include <sql.h>
#include <sqlext.h>

#include "tpcc_com_ps.h"
#include "..\..\common\src\trans.h"
                //tpckit transaction header contains defination s of structures
specific
to TPC-C
#include "..\..\common\src\txn_base.h"
#include "..\..\common\src\error.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 "resource.h"
#include "tpcc_com_all.h"
#include "tpcc_com_all_i.c"
#include "Methods.h"
#include "..\..\tpcc_com_ps\src\tpcc_com_ps_i.c"
#include "..\..\common\src\ReadRegistry.cpp"


CComModule _Module;

BEGIN_OBJECT_MAP(ObjectMap)
                OBJECT_ENTRY(CLSID_TPCC, CTPCC)
                OBJECT_ENTRY(CLSID_NewOrder, CNewOrder)
                OBJECT_ENTRY(CLSID_OrderStatus, COrderStatus)
                OBJECT_ENTRY(CLSID_Payment, CPayment)
                OBJECT_ENTRY(CLSID_StockLevel, CStockLevel)
END_OBJECT_MAP()


// configuration settings from registry
TPCCREGISTRYDATA                Reg;
char
                szMyComputerName[MAX_COMPUTERNAME_LENGTH+1];

static  HINSTANCE hLibInstanceDb = NULL;

TYPE_CTPCC_DBLIB                *pCTPCC_DBLIB_new;
TYPE_CTPCC_ODBC                                 *pCTPCC_ODBC_new;


////////////////////////////////////////////////////////////////////////////   ////////
// DLL Entry Point

extern "C"
BOOL WINAPI DllMain(HINSTANCE hInstance, DWORD dwReason, LPVOID /*lpReserved*/)
{
                char szDllName[128];

                try
                {
                                if (dwReason == DLL_PROCESS_ATTACH)
                                {
                                                _Module.Init(ObjectMap, hInstance);
                                                DisableThreadLibrar yCalls(hInstance);

                                                DWORD dwSize =
MAX_COMPUTERNAME_LENGTH+1;
                                                GetComputerName(szMyComputerName,
&dwSize);
                                                szMyComputerName[dwSize] = 0;

                                                if ( ReadTPCCRegistrySettings( &Reg ) )
                                                                throw new
CCOMPONENT_ERR( ERR_MISSING_REGISTRY_ENTRIES );

                                                if (Reg.eDB_Protocol == DBLIB)
```

```
                                        {
                                                strcpy( szDllName,
Reg.szPath );
                                                strcat( szDllName,
"tpcc_dblib.dll");
                                                hLibInstanceDb =
LoadLibrary( szDllName );
                                                if (hLibInstanceDb == NULL)
                                                        throw new
CCOMPONENT_ERR( ERR_LOADDLL_FAILED, szDllName, G  etLastError() );
                                                // get function pointer to
wrapper for class constructor
                                                pCTPCC_DBLIB_new =
(TYPE_CTPCC_DBLIB*) GetProcAddress(hLibInstanceDb,"CTPCC_DBLIB_new");
                                                if (pCTPCC_DBLIB_new ==
NULL)
                                                        throw new
CCOMPONENT_ERR( ERR_GETPROCADDR_FAI  LED, szDllName, GetLastError() );
                                                }
                                                else if (Reg.eDB_Protocol == ODBC)
                                                {
                                                strcpy( szDllName,
Reg.szPath );
                                                strcat( szDllName,
"tpcc_odbc.dll");
                                                hLibInstanceDb =
LoadLibrary( szDllName );
                                                if (hLibInstanceDb == NULL)
                                                        throw new
CCOMPONENT_ERR( ERR_LOADDLL_FAILED, szDllName, GetLastError() );
                                                // get function pointer to
wrapper for class constructor
                                                pCTPCC_ODBC_new =
(TYPE_CTPCC_ODBC*) GetProcAddress(hLibInstanceDb,"CTPCC_ODBC_new");
                                                if (pCTPCC_ODBC_new ==
NULL)
                                                        throw new
CCOMPONENT_ERR( ERR_GETPROCADDR_FAILED, szDllName, GetLastError() );
                                                }
                                                else
                                                        throw new
CCOMPONENT_ERR( ERR_UNKNOWN_DB_PROTOCOL );
                                        }
                                        else if (dwReason == DLL_PROCESS_DETACH)
                                                _Module.Term();

        }
        catch (CBaseErr *e)
        {
                        WriteMessageT oEventLog(e ->ErrorText());
                        delete e;
                        return FALSE;
        }
        catch (...)
        {
                        WriteMessageToEventLog(TEXT("Unhandled exception in
object DllMain"));
                        return FALSE;
        }

        return TRUE;  // OK
}

////////////////////////////////////////////////////////////////////   ////////////
// Used to determine whether the DLL can be unloaded by OLE

STDAPI DllCanUnloadNow(void)
{
        return (_Module.GetLockCount()==0) ? S_OK : S_FALSE;
}

////////////////////////////////////////////////////////////////////////////
// Returns a cla ss factory to create an object of the requested type

STDAPI DllGetClassObject(REFCLSID rclsid, REFIID riid, LPVOID* ppv)
{
        return _Module.GetClassObject(rclsid, riid, ppv);
}

////////////////////////////////////////////////////////////////////////////
// DllRegisterServer  - Adds entries to the system registry

STDAPI DllRegisterServer(void)
{
        // registers object, typelib and all interfaces in typelib
        return _Module.RegisterServer(TRUE);
}

////////////////////////////////////////////////////////////////   //////////////
// DllUnregisterServer  - Removes entries from the system registry

STDAPI DllUnregisterServer(void)
{
        _Module.UnregisterServer();
        return S_OK;
}


static void WriteMessageToEventLog(LPTSTR lpszMsg)
{
    TCHAR   szMsg[256];
    HANDLE  hE ventSource;
    LPTSTR  lpszStrings[2];

    // Use event logging to log the error.
    //
    hEventSource = RegisterEventSource(NULL, TEXT("tpcc_com_all.dll"));

    _stprintf(szMsg, TEXT("Error in COM+ TPC  -C Component: "));
    lpszStrings[0] = szMsg;
    lpszStrings[1] = lpszMsg;

    if (hEventSource != NULL)
        {
        ReportEvent(hEventSource, // handle of event source
            EVENTLOG_ERROR_TYPE,  // event type
            0,                    // event category
            0,                     // event ID
            NULL,                 // current user's SID
            2,                    // strings in lpszStrings
            0,                    // no bytes of raw data
            (LPCTSTR *)lpszStrings,    // array of error strings
            NULL);                // no raw data

        (VOID) DeregisterEventSource(hEventSource);
    }
}

inline void ReleaseInterface(IUnknown *pUnk)
{
        if (pUnk)
        {
                pUnk->Release();
                pUnk = NULL;
        }
}

/* FUNCTION: CCOMPONENT_ERR::ErrorText
 *
 */

char* CCOMPONENT_ERR::ErrorText(void)
{
        static SERRORMSG errorMsgs[] =
        {
                { ERR_MISSING_REGISTRY_ENTRIES,         "Required
entries missing from registry."
                },
                { ERR_LOADDLL_FAILED,
                "Load of DLL failed.  DLL="


},                      { ERR_GETPROCADDR_FAILED,               "Could not
map proc in DLL.  GetProcAddr error.  DLL="             },
                        { ERR_UNKNOWN_DB_PROTOCOL,              "Unknown
database protocol specified in registry."               },
                        { 0,
                                ""


                                                                }

        };

        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;
}


CTPCC_Common::CTPCC_Common()
{
        m_pTxn = NULL;
        m_bCanBePooled = TRUE;
}

CTPCC_Common::~CTPCC_Comm on()
{
        if (m_pTxn)
                delete m_pTxn;
}

HRESULT CTPCC_Common::CallSetComplete()
{
        IObjectContext* pObjectContext = NULL;

        // get our object context
        HRESULT hr = CoGetObjectContext( IID_IObjectContext, (void
**)&pObjectContext );
        pObjectContext ->SetComplete();
        ReleaseInterface(pObjectContext);
        return hr;
}

//
//              called by the ctor activator
//
STDMETHODIMP CTPCC_Common::Construct(IDispatch * pUnk)
{
        // Code to access construction string, if needed later...
        //              if (!pUnk)
        //                      return E_UNEXPECTED;
        //              IObjectConstructString * pString = NULL;
        //              HRESULT hr = pUnk -
>QueryInterface(IID_IObjectConstructString, (void **)&pString);
        //              pString->Release();

        try
        {
                        if (Reg.eDB_Protocol == ODBC)
                                m_pTxn = pCTPCC_ODBC_new( Reg.szDbServer,
Reg.szDbUser,  Reg.szDbPassword, szMyComputerName, Reg.szDbName );
                        else if (Reg.eDB_Protocol == DBLIB)
                                m_pTxn =
pCTPCC_DBLIB_new( Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword,
szMyComputerName, Reg.szDbName );
                }
                catch (CBaseErr *e)
                {
                        WriteMessageToEventLog( e->ErrorText());
                        delete e;
                        return E_FAIL;
                }
                catch (...)
                {
                        WriteMessageToEventLog(TEXT("Unhandled exception in
object ::Construct"));
                        return E_FAIL;
                }

                return S_OK;
}

HRESULT CTPCC_Common::NewOrder(VARIANT txn_in, VARIANT* txn_out)
{
                PNEW_ORDER_DATA             pNewOrder;
                COM_DATA                    *pData;
                try
                {
                        pData = (COM_DATA*)txn_in.parray  ->pvData;
                        pNewOrder = m_pTxn ->BuffAddr_NewOrder();

                        memcpy(pNewOrder, &pData ->u.NewOrder,
sizeof(NEW_ORDER_DATA));

                        m_pTxn->NewOrder();                             // do the
actual txn

                        VariantInit(txn_out);
                        txn_out->vt = VT_SAFEARRAY;
                        txn_out->parray = SafeArrayCreateVector(VT_UI1,

                txn_in.parray ->rgsabound ->cElements,

                txn_in.parray ->rgsabound ->cElements);
                        pData = (COM_DATA*) txn_out ->parray->pvData;

                        memcpy( &pData ->u.NewOrder, pNewOrder,
sizeof(NEW_ORDER_DATA));

                        pData->retval = ERR_SUCCESS;
                        pData->error = 0;
                        return S_OK;
                }
                catch (CBaseErr *e)
                {
                        // check for lost database connection; if yes,
component is toast
                        if ( ((e->ErrorType() == ERR_TYPE_DBLIB) && (e  -
>ErrorNum() == 10005)) ||                       ((e->ErrorType() == ERR_TYPE_ODBC) &&
(e->ErrorNum() == 10054)) )                     m_bCanBePooled = FALSE;

                        pData->retval = e ->ErrorType();
                        pData->error = e ->ErrorNum();
                        delete e;
                        return E_FAIL;
                }
                catch (...)
                {
                        WriteMessageToEv entLog(TEXT("Unhandled exception."));
                        pData->retval = ERR_TYPE_LOGIC;
                        pData->error = 0;
                        m_bCanBePooled = FALSE;
                        return E_FAIL;
                }
}

HRESULT CTPCC_Common::Payment(VARIANT txn_in, VARIANT* txn_out)
{
                PPAYMENT_DATA pPayment;
                COM_DATA                    *pData;
                try
                {
                        pData = (COM_DATA*)txn_in.parray  ->pvData;
                        pPayment = m_pTxn ->BuffAddr_Payment();

                        memcpy(pPayment, &pData ->u.Payment,
sizeof(PAYMENT_DATA));

                        m_pTxn->Payment();                              // do the
actual txn
```

```
                        VariantInit(txn_out);
                        txn_out->vt = VT_SAFEARRAY;
                        txn_out->parray = SafeArrayCreateVector( VT_UI1,

            txn_in.parray->rgsabound->cElements,

            txn_in.parray->rgsabound->cElements);
                        pData = (COM_DATA*) txn_out ->parray->pvData;

                        memcpy( &pData->u.Payment, pPayment,
sizeof(PAYMENT_DATA));

                        pData->retval = ERR_SUCCESS;
                        pData->error = 0;
                        return S_OK;
            }
            catch (CBaseErr *e)
            {
                        // check for lost database connection; if yes,
component is toast
                        if ( ((e->ErrorType() == ERR_TYPE_DBLIB) && (e -
>ErrorNum() == 10005)) ||
                                    ((e->ErrorType() == ERR _TYPE_ODBC) &&
(e->ErrorNum() == 10054)) )
                                    m_bCanBePooled = FALSE;

                        pData->retval = e->ErrorType();
                        pData->error = e->ErrorNum();
                        delete e;
                        return E_FAIL;
            }
            catch (...)
            {
                        WriteMessageToEventLog(TEXT("Unhandled exception."));
                        pData->retval = ERR_TYPE_LOGIC;
                        pData->error = 0;
                        m_bCanBePooled = FALSE;
                        return E_FAIL;
            }
}

HRESULT CTPCC_Common::StockLevel(VARIANT txn_in, VARIANT* txn_out)
{
            PSTOCK_LEVEL_DATA           pStockLevel;
            COM_DATA                                *pData;

            try
            {
                        pData = (COM_DATA*)txn_in.parray->pvData;
                        pStockLevel = m_pTxn->BuffAddr_StockLevel();

                        memcpy(pStockLevel, &pData->u.StockLevel,
sizeof(STOCK_LEVEL_DATA));

                        m_pTxn->StockLevel();

                        VariantInit(txn_out);
                        txn_out->vt = VT_SAFEARRAY;
                        txn_out->parray = SafeArrayCreateVector( VT_UI 1,

            txn_in.parray->rgsabound->cElements,

            txn_in.parray->rgsabound->cElements);
                        pData = (COM_DATA*)txn_out ->parray->pvData;

                        memcpy( &pData->u.StockLevel, pStockLevel,
sizeof(STOCK_LEVEL_DATA));

                        pData->retval = ERR_SUCCESS;
                        pData->error = 0;
                        return S_OK;
            }
            catch (CBaseErr *e)
            {
                        // check for lost database connection; if yes,
component is toast
                        if ( ((e->ErrorType() == ERR_TYPE_DBLIB) && (e -
>ErrorNum() == 10005)) ||
                                    ((e->ErrorType() == ERR_TYPE_ODBC) &&
(e->ErrorNum() == 10 054)) )
                                    m_bCanBePooled = FALSE;

                        pData->retval = e->ErrorType();
                        pData->error = e->ErrorNum();
                        delete e;
                        return E_FAIL;
            }
            catch (...)
            {
                        WriteMessageToEventLog(TEXT("Unhandled exception."));
                        pData->retval = ERR_TYPE_LOGIC;
                        pData->error = 0;
                        m_bCanBePooled = FALSE;
                        return E_FAIL;
            }
}

HRESULT CTPCC_Common::OrderStatus(VARIANT txn_in, VARIANT* txn_out)
{
            PORDER_STATUS_DATA          pOrderStatus;
            COM_DATA                                *pData;
            try
            {
                        pData = (COM_DATA*)txn_in.parray->pvData;
                        pOrderStatus = m_pTxn->BuffAddr_OrderStatus();

                        memcpy(pOrderStatus, &pData->u.OrderStatus,
sizeof(ORDER_STATUS_DATA));

                        m_pTxn->OrderStatus();
```

```
                        VariantInit(txn_out);
                        txn_out->vt = VT_SAFEARRAY;
                        txn_out->parray = SafeArrayCreateVector( VT_UI1,

            txn_in.parray->rgsabound->cElements,

            txn_in.parray->rgsabound->cElements);
                        pData = (COM_DATA*)txn_out ->parray->pvData;

                        memcpy( &pData->u.OrderStatus, pOrderStatus,
sizeof(ORDER_STATUS_DATA));

                        pData->retval = ERR_SUCCESS;
                        pData->error = 0;
                        return S_OK;
            }
            catch (CBaseErr *e)
            {
                        // check for lost database connection; if yes,
component is toast
                        if ( ((e->ErrorType() == ERR_TYPE_DBLIB) && (e -
>ErrorNum() == 10005)) ||
                                    ((e->ErrorType() == ERR_TYPE_ODBC) &&
(e->ErrorNum() == 10054)) )
                                    m_bCanBePooled = FALSE;

                        pData->retval = e->ErrorType();
                        pData->error = e->ErrorNum();
                        delete e;
                        return E_FAIL;
            }
            catch (...)
            {
                        WriteMessageToEventLog(TEXT("Unhandled exception."));
                        pData->retval = ERR_TYPE_LOGIC;
                        pData->error = 0;
                        m_bCanBePooled = FAL SE;
                        return E_FAIL;
            }
}
```

tpcc_com_all/src/tpcc_com_all.def

```
; tpcc_com_all.def : Declares the module parameters.

LIBRARY      "tpcc_com_all.dll"

EXPORTS
            DllCanUnloadNow     @1 PRIVATE
            DllGetClassObject   @2 PRIVATE
            DllRegisterServer   @3 PRIVATE
            DllUnregisterServer         @4 PRIVATE
```

tpcc_com_all/src/tpcc_com_all.h

```
#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the definitions for the interfaces */


 /* File created by MIDL compiler version 5.03.  0280 */
/* at Thu Dec 13 23:13:14 2001
 */
/* Compiler settings for . \src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level :
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


/* verify that the <rpcndr.h> version is high enough to compile this file*/
#ifndef __REQUIRED_RPCNDR_H_VE RSION__
#define __REQUIRED_RPCNDR_H_VERSION__ 440
#endif

#include "rpc.h"
#include "rpcndr.h"

#ifndef __tpcc_com_all_h__
#define __tpcc_com_all_h__

/* Forward Declarations */

#ifndef __TPCC_FWD_DEFINED__
#define __TPCC_FWD_DEFINED__

#ifdef __cplusplu s
typedef class TPCC TPCC;
#else
typedef struct TPCC TPCC;
#endif /* __cplusplus */

#endif        /* __TPCC_FWD_DEFINED__ */

#ifndef __NewOrder_FWD_DEFINED__
#define __NewOrder_FWD_DEFINED__

#ifdef __cplusplus
typedef class NewOrder NewOrder;
#else
typedef s truct NewOrder NewOrder;
#endif /* __cplusplus */

#endif        /* __NewOrder_FWD_DEFINED__ */


#ifndef __OrderStatus_FWD_DEFINED__
#define __OrderStatus_FWD_DEFINED__

#ifdef __cplusplus
typedef class OrderStatus OrderStatus;
#else
typedef struct OrderStatus  OrderStatus;
#endif /* __cplusplus */

#endif        /* __OrderStatus_FWD_DEFINED__ */


#ifndef __Payment_FWD_DEFINED__
#define __Payment_FWD_DEFINED__

#ifdef __cplusplus
typedef class Payment Payment;
#else
typedef struct Payment Payment;
#endif /* __cplusplu s */

#endif        /* __Payment_FWD_DEFINED__ */


#ifndef __StockLevel_FWD_DEFINED__
#define __StockLevel_FWD_DEFINED__

#ifdef __cplusplus
typedef class StockLevel StockLevel;
#else
typedef struct StockLevel StockLevel;
#endif /* __cplusplus */

#endif        /* __StockLevel_FWD_DEFINED__ */


/* header files for imported files */
#include "oaidl.h"
#include "ocidl.h"
#include "tpcc_com_ps.h"

#ifdef __cplusplus
extern "C"{
#endif

void __RPC_FAR * __RPC_USER MIDL_user_allocate(size_t);
void __RPC_USER MIDL_user_fr ee( void __RPC_FAR * );

/* interface __MIDL_itf_tpcc_com_all_0000 */
/* [local] */




extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_all_0000_v0_0_c_ifspec;
extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_all_0000_v0_0_s_ifspec;


#ifndef __TPCCLib_LIBRARY_DEFI NED__
#define __TPCCLib_LIBRARY_DEFINED__

/* library TPCCLib */
/* [helpstring][version][uuid] */


EXTERN_C const IID LIBID_TPCCLib;

EXTERN_C const CLSID CLSID_TPCC;

#ifdef __cplusplus

class DECLSPEC_UUID("122A3128 -2520-11D3-BA71-00C04FBFE08B")
TPCC;
#endif

EXTERN_C const CLSID CLSID_NewOrder;

#ifdef __cplusplus

class DECLSPEC_UUID("975BAABF -84A7-11D2-BA47-00C04FBFE08B")
NewOrder;
#endif

EXTERN_C const CLSID CLSID_OrderStatus;

#ifdef __cplusplus

class DECLSPEC_UUID("266836AD -A50D-11D2-BA4E-00C04FBFE08B")
OrderStatus;
#endif

EXTERN_C const CLSID CLSID_Payment;

#ifdef __cplusplus
```

```
class DECLSPEC_UUID("CD02F7EF -A4FA-11D2-BA4E-00C04FBFE08B")
Payment;
#endif

EXTERN_C const CLSID CLSID_StockLevel;

#ifdef __cplusplus

class DECLSPEC_UUID("2668369E -A50D-11D2-BA4E-00C04FBFE08B")
StockLevel;
#endif
#endif /* __TPCCLib_LIBRARY_DEFINED__ */

/* Additional Prototypes for ALL interfaces */

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif
```

tpcc_com_all/src/tpcc_com_all.idl

```
/*            FILE:                         TPCC.IDL
 *                                                  Microsoft TPC -C Kit Ver.
4.20.000
 *                                                  Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                                  not yet audited
 *
 *            PURPOSE:      IDL source for TPCC.dll.  This file is processed by
the MIDL tool to
 *                                                  produce the type libra ry
(TPCC.tlb) and marshalling code.
 *
 *  Change history:
 *                          4.20.000  - first version
 */

interface TPCC;
interface NewOrder;
interface OrderStatus;
interface Payment;
interface StockLevel;


import "oaidl.idl";
import "ocidl.idl";
import "..\tpcc_com_ps\src\tpcc_com_ps.idl";

[
            uuid(122A3117 -2520-11D3-BA71-00C04FBFE08B),
            version(1.0),
            helpstring("TPC -C 1.0 Type Library")
]
library TPCCLib
{
            importlib("stdole32.tlb");
            importlib("stdole2.tlb");

            [
                        uuid(122A3128 -2520-11D3-BA71-00C04FBFE08B),
                        helpstring("All Txns Class")
            ]
            coclass TPCC
            {
                        [default] interface ITPCC;
            };


            [
                        uuid(975BAABF -84A7-11D2-BA47-00C04FBFE08B),
                        helpstring("NewOrder Class")
            ]
            coclass NewOrder
            {
                        [default] interface ITPCC;
            };


            [
                        uuid(266836AD -A50D-11D2-BA4E-00C04FBFE08B),
                        helpstring("OrderStatus Class")
            ]
            coclass OrderStatus
            {
                        [default] interface ITPCC;
            };


            [
                        uuid(CD02F7EF -A4FA-11D2-BA4E-00C04FBFE08B),
                        helpstring("Payment Class")
            ]
            coclass Payment
            {
                        [default] interface ITPCC;
            };

            [
                        uuid(2668369E -A50D-11D2-BA4E-00C04FBFE08B),
                        helpstring("StockLevel Class")
            ]
            coclass StockLevel
            {
                        [default] interface ITPCC;
            };

};
```

tpcc_com_all/src/tpcc_com_all.rc

```
//Microsoft Developer Studio generated resource script.
//
#include "resource.h"

#define APSTUDIO_READONLY_SYMBOLS
////////////////////////////////////////////////////////////////////////////
//
// Generated from the TEXTINCLUDE 2 resource.
//
#include "winres.h"

////////////////////////////////////////////////////////////////////////////
#undef APSTUDIO_READONLY_SYMBOLS

////////////////////////////////////////////////////////////////////////////
// English (U.S.) resources

#if !defined(AFX_RESOURCE_DLL) || defined(AFX_TARG_ENU)
#ifdef _WIN32
LANGUAGE LANG_ENGLISH, SUBLANG_ENGLISH_US
#pragma code_page(1252)
#endif //_WIN32

#ifdef APSTUDIO_INVOKED
////////////////////////////////////////////////////////////////////////////
//
// TEXTINCLUDE
//

1 TEXTINCLUDE DISCARDABLE
BEGIN
    "resource.h\0"
END

2 TEXTINCLUDE DISCARDABLE
BEGIN
    "#include ""winres.h""\r\n"
    "\0"
END

3 TEXTINCLUDE DISCARDABLE
BEGIN
    "1 TYPELIB ""tpcc_com_all.tlb""\r\n"
    "\0"
END

#endif    // APSTUDIO_INVOKED


#ifndef _MAC
////////////////////////////////////////////////////////////////////////////
//
// Version
//

VS_VERSION_INFO VERSIONINFO
 FILEVERSION 1,0,0,1
 PRODUCTVERSION 1,0,0,1
 FILEFLAGSMASK 0x3fL
#ifdef _DEBUG
 FILEFLAGS 0x1L
#else
 FILEFLAGS 0x0L
#endif
 FILEOS 0x4L
 FILETYPE 0x2L
 FILESUBTYPE 0x0L
BEGIN
    BLOCK "StringFileInfo"
    BEGIN
        BLOCK "040904B0"
        BEGIN
            VALUE "CompanyName", "  \0"
            VALUE "FileDescription", "tpcc_com_all Module   \0"
            VALUE "FileVersion", "1, 0, 0, 1  \0"
            VALUE "InternalName", "TPCCNEWORDER  \0"
            VALUE  "LegalCopyright", "Copyright 1997 \0"
            VALUE "OriginalFilename", "tpcc_com_all.DLL  \0"
            VALUE "ProductName", "tpcc_com_all Module  \0"
            VALUE "ProductVersion", "1, 0, 0, 1  \0"
            VALUE "OLESelfRegister", "  \0"
        END
    END
    BLOCK "VarFileInfo"
    BEGIN
        VALUE "Translation", 0x409, 1200
    END
END

#endif    // !_MAC
```

```
////////////////////////////////////////////////////////////////////////////
//
// REGISTRY
//

IDR_TPCC                REGISTRY DISCAR  DABLE    "tpcc_com_all.rgs"
IDR_NEWORDER            REGISTRY DISCARDABLE    "tpcc_com_no.rgs"
IDR_ORDERSTATUS         REGISTRY DISCARDABLE    "tpcc_com_os.rgs"
IDR_PAYMENT             REGISTRY DISCARDABLE    "tpcc_com_pay.rgs"
IDR_STOCKLEVEL          REGIS TRY DISCARDABLE    "tpcc_com_sl.rgs"

////////////////////////////////////////////////////////////////////////////
//
// String Table
//

STRINGTABLE DISCARDABLE
BEGIN
    IDS_PROJNAME            "tpcc_com_all"
END

#endif    // English (U.S.) resources
////////////////////////////////////////////////////////////////////////////



#ifndef APSTUDIO_INVOKED
////////////////////////////////////////////////////////////////////////////
//
// Generated from the TEXTINCLUDE 3 resource.
//
1 TYPELIB "tpcc_com_ all.tlb"

////////////////////////////////////////////////////////////////////////////
#endif    // not APSTUDIO_INVOKED
```

tpcc_com_all/src/tpcc_com_all.rgs

```
HKCR
{
            TPCC.AllTxns.1 = s 'All Txns Class'
            {
                        CLSID = s '{122A3128 -2520-11D3-BA71-00C04FBFE08B} '
            }
            TPCC.AllTxns = s 'TPCC Class'
            {
                        CurVer = s 'TPCC.AllTxns.1'
            }
            NoRemove CLSID
            {
                        ForceRemove {122A3128 -2520-11D3-BA71-00C04FBFE08B} = s
'TPCC Class'
                        {
                                    ProgID = s 'TPCC.AllTxns.1'
                                    VersionIndependentProgID = s
'TPCC.AllTxns'
                                    InprocServer32 = s '%MODULE%'
                                    {
                                                val ThreadingModel = s
'Both'
                                    }
                        }
            }
}
```

tpcc_com_all/src/tpcc_com_all_i.c

```
#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the IIDs and CLSIDs */

/* link this fil e in with the server and any clients */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:14 2001
 */
/* Compiler settings for . \src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if !defined(_M_IA 64) && !defined(_M_AXP64)

#ifdef __cplusplus
extern "C"{
#endif


#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_
```

```
#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFI NE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)    \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)    \
        const  type name = {l,w1,w2,{b1,b2,b3,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
LIBID_TPCCLib,0x122A3117,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_TPCC,0x122A3128,0x2520,0x11D3,0xBA,0x71,0x00   ,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_NewOrder,0x975BAABF,0x84A7,0x11D2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_OrderStatus,0x266836AD,0xA50D,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8
B);


MIDL_DEFINE_GUID(CLSID,
CLSID_Payment,0xCD02F7EF,0xA4FA,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_StockLevel,0x2668369E,0xA50D,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B
);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif


#endif /* !defined(_M_IA64) && !defined(_M_AXP64)*/


#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the IIDs and CLSIDs */

/* link this file in with the server and any clients */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:14 2001
 */
/* Compiler settings for . \src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext,
robust
    error checks: allocation ref boun  ds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if defined(_M_IA64) || defined(_M_AXP64)

#ifdef __cplusplus
extern "C"{
#endif


#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b  2,b3,b4,b5,b6,b7,b8)  \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)    \
        const type name = {l,w1,w2,{b1,b2,b3  ,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
LIBID_TPCCLib,0x122A3117,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_TPCC,0x122A3128,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_NewOrder,0x975BAABF,0x84A7,0x11D2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_OrderStatus,0x266836AD,0xA50D,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8
B);


MIDL_DEFINE_GUID(CLSID,
CLSID_Payment ,0xCD02F7EF,0xA4FA,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_StockLevel,0x2668369E,0xA50D,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B
);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif


#endif /* defined(_M_ IA64) || defined(_M_AXP64)*/
```

tpcc_com_all/src/tpcc_com_no.rgs

```
HKCR
{
        TPCC.NewOrder.1 = s 'NewOrder Class'
        {
                CLSID = s '{975BAABF -84A7-11D2-BA47-00C04FBFE08B}'
        }
        TPCC.NewOrder = s 'NewOrder Class'
        {
                CurVer = s 'TPCC.NewOrder.1'
        }
        NoRemove CLSID
        {
                ForceRemove {975BAABF -84A7-11D2-BA47-00C04FBFE08B} = s
'NewOrder Class'
                {
                        ProgID = s 'TPCC.NewOrder.1'
                        VersionIndependentProgID = s
'TPCC.NewOrder'
                        InprocServer32 = s '%MODULE%'
                        {
                                val ThreadingModel = s
'Both'
                        }
                }
        }
}
```

tpcc_com_all/src/tpcc_com_os.rgs

```
HKCR
{
        TPCC.OrderStatus.1 = s 'OrderStatus Class'
        {
                CLSID = s '{266836AD -A50D-11D2-BA4E-00C04FBFE08B}'
        }
        TPCC.OrderStatus = s 'OrderStatus Class'
        {
                CurVer = s 'TPCC.OrderStatus.1'
        }
        NoRemove CLSID
        {
                ForceRemove {26683 6AD-A50D-11D2-BA4E-00C04FBFE08B} = s
'OrderStatus Class'
                {
                        ProgID = s 'TPCC.OrderStatus.1'
                        VersionIndependentProgID = s
'TPCC.OrderStatus'
                        InprocServer32 = s '%MODULE%'
                        {
                                val ThreadingModel = s
'Both'
                        }
                }
        }
}
```

tpcc_com_all/src/tpcc_com_pay.rgs

```
HKCR
{
        TPCC.Payment.1 = s 'Payment Class'
        {
                CLSID = s '{CD02F7EF -A4FA-11D2-BA4E-00C04FBFE08B}'
        }
        TPCC.Payment = s 'Payment Class'
        {
                CurVer = s 'TPCC.Payment.1'
        }
        NoRemove CLSID
        {
                ForceRemove {CD02F7EF -A4FA-11D2-BA4E-00C04FBFE08B}  = s
'Payment Class'
                {
                        ProgID = s 'TPCC.Payment.1'
                        VersionIndependentProgID = s
'TPCC.Payment'
                        InprocServer32 = s '%MODULE%'
                        {
                                val ThreadingModel = s
'Both'
                        }
                }
        }
}
```

tpcc_com_all/src/tpcc_com_ps.h

```
#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the definitions for the interfaces */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for . \src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


/* verify that the <rpcndr.h> version is high enough to compile this file*/
#ifndef __REQUIRED_RPCNDR_H_VERSION__
#define __REQUIRED_RPCNDR_H_VERSION__ 440
#endif

#include "rpc.h"
#include "rpcndr.h"

#ifndef __RPCNDR_H_VERSION__
#error this stub requires an updated version of <rpcndr.h>
#endif // __RPCNDR_H_VERSION__

#ifndef COM_NO_WINDOWS_H
#include "windows.h"
#include "ole2.h"
#endif /*COM_NO_WINDOWS_H*/

#ifndef __tpcc_com_ps_h__
#define __tpcc_com_ps_h__

/* Forward Declarations */

#ifndef __ITPCC_FWD_DEFINED__
#define __ITPCC_FWD_DEFINED__
typedef interface ITPCC ITPCC;
#endif         /* __ITPCC_FWD_DEFINED__ */
```

```
/* header files for imported files */
#include "oaidl.h"
#include "ocidl.h"

#ifdef __cplusplus
extern "C"{
#endif

void __RPC_FAR * __RPC_USER MIDL_user_allocate(size_t);
void __RPC_USER MIDL_user_free( void __RPC_FAR * );

/* interface __MIDL_itf_tpcc_com_ps_0000 */
/* [local] */



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;

#ifndef __ITPCC_INTERFACE_DEFINED__
#define __ITPCC_INTERFACE_DEFINED__

/* interface ITPCC */
/* [unique][helpstring][uuid][oleautomation][object] */


EXTERN_C const IID IID_ITPCC;

#if defined(__cplusplus) && !defined(CINTERFACE)

    MIDL_INTERFACE("FEEE6AA2 -84B1-11d2-BA47-00C04FBFE08B")
    ITPCC : public IUnknown
    {
    public:
        virtual HRESULT __stdcall NewOrder(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Payment(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Delivery(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall StockLevel(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall OrderStatus(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall CallSetComplete( void) = 0;

    };

#else       /* C style interfac e */

    typedef struct ITPCCVtbl
    {
        BEGIN_INTERFACE

        HRESULT ( STDMETHODCALLTYPE __RPC_FAR *QueryInterface )(
            ITPCC __RPC_FAR * This,
            /* [in] */ REFIID riid,
            /* [iid_is][out] */ void __RPC_F  AR *__RPC_FAR *ppvObject);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *AddRef )(
            ITPCC __RPC_FAR * This);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *Release )(
            ITPCC __RPC_FAR * This);

        HRESULT ( __stdcall __RPC_FAR *NewOrder )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Payment )(
            ITPCC __RPC_FAR * T his,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Delivery )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */  VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *StockLevel )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcal l __RPC_FAR *OrderStatus )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *CallSetComplete )(
            ITPCC __RPC_FAR * T his);

        END_INTERFACE
    } ITPCCVtbl;

    interface ITPCC
    {
        CONST_VTBL struct ITPCCVtbl __RPC_FAR *lpVtbl;
    };



#ifdef COBJMACROS


#define ITPCC_QueryInterface(This,riid,ppvObject)        \
    (This)->lpVtbl -> QueryInterfa ce(This,riid,ppvObject)

#define ITPCC_AddRef(This)  \
    (This)->lpVtbl -> AddRef(This)

#define ITPCC_Release(This)  \
    (This)->lpVtbl -> Release(This)


#define ITPCC_NewOrder(This,txn_in,txn_out)              \
    (This)->lpVtbl -> NewOrder(This,txn_in,txn_out)

#define ITPCC_Payment(This,txn_in,txn_out)               \
    (This)->lpVtbl -> Payment(This,txn_in,txn_out)

#define ITPCC_Delivery(This,txn_in,txn_out)              \
    (This)->lpVtbl -> Delivery(This,txn_in,txn_out)

#define ITPCC_StockLevel(This,txn_in,txn_out)            \
    (This)->lpVtbl -> StockLevel(This,txn_in,txn_out)

#define ITPCC_OrderStatus(This,txn_in,txn_out)           \
    (This)->lpVtbl -> OrderStatus(This,txn_in,txn_out)

#define ITPCC_CallSetComplete(This)        \
    (This)->lpVtbl -> CallSetComplete(This)

#endif /* COBJMACROS */


#endif        /* C style interface */


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,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    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 *_pdwStu bPhase);


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 *_pRpcC hannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_CallSetComplete_Proxy(
    ITPCC __RPC_FAR * This);


void __RPC_STUB ITPCC_CallSetComplete_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChann elBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);



#endif        /* __ITPCC_INTERFACE_DEFINED__ */


/* Additional Prototypes for ALL interfaces */

unsigned long             __RPC_USER  VARIANT_UserSize(     unsigned long
__RPC_FAR *, unsign ed 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 * );
void                      __RPC_USER  VARIANT_UserFree(     unsigned long
__RPC_FAR *, VARIANT __RPC_FAR * );

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif
```

tpcc_com_all/src/tpcc_com_sl.rgs

```
HKCR
{
            TPCC.StockLevel.1 = s 'StockLevel Class'
            {
                        CLSID = s '{2668369E -A50D-11D2-BA4E-00C04FBFE08B}'
            }
            TPCC.StockLevel = s 'StockLevel Class'
            {
                        CurVer = s 'TPCC.StockLevel.1'
            }
            NoRemove CLSID
            {
                        ForceRemove {266836 9E-A50D-11D2-BA4E-00C04FBFE08B} = s
'StockLevel Class'
                        {
                                    ProgID = s 'TPCC.StockLevel.1'
                                    VersionIndependentProgID = s
'TPCC.StockLevel'
                                    InprocServer32 = s '%MODULE%'
                                    {
                                                val ThreadingModel = s
'Both'
                                    }
                        }
            }
}
```

tpcc_com_ps/tpcc_com_ps.dsp

```
# Microsoft Developer Studio Project File   - Name="tpcc_com_ps"  - Package
Owner=<4>
# Microsoft Developer Studio Generated Build File, Format Version 6.00
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Application" 0x0101

CFG=tpcc_com_ps  - Win32 Debug
!MESSAGE This is not a valid makefile. To build this project using NMAKE,
!MESSAGE use the Export Makefile command and run
!MESSAGE
!MESSAGE NMAKE /f "tpcc_com_ps.mak".
!MESSAGE
!MESSAGE You can specify a configuration when running NMAKE
!MESSAGE by defining  the macro CFG on the command line. For example:
!MESSAGE
!MESSAGE NMAKE /f "tpcc_com_ps.mak" CFG="tpcc_com_ps    - Win32 Debug"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "tpcc_com_ps  - Win32 Release" (based on "Win32 (x86  ) Application")
!MESSAGE "tpcc_com_ps  - Win32 Debug" (based on "Win32 (x86) Application")
!MESSAGE

# Begin Project
# PROP AllowPerConfigDependencies 0
# PROP Scc_ProjName ""
# PROP Scc_LocalPath ""
CPP=cl.exe
MTL=midl.exe
RSC=rc.exe

!IF  "$(CFG)" == "tp cc_com_ps  - Win32 Release"
```

```
# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /FD
/c
# ADD CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D _WIN32_WINNT=0x0400 /D
"REGISTER_PROXY_DLL" /FD /c
# SUBTRACT CPP /YX
# ADD BASE MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib /nologo /subsystem:windows /machine:I386
# ADD LINK32 kernel32.lib rpcndr.lib rpcns4.lib rpcrt4.lib oleaut32.lib uuid.lib
/nologo /entry:"DllMain" /subsystem:windows /dll /pdb:none

/machine:I386 /def:". \src\tpcc_com_ps.def"
# Begin Custom Build - Copying tpcc_com_ps.h
InputPath=. \bin\tpcc_com_ps.dll
SOURCE="$(InputPath)"

"..\tpcc_com_all \src\tpcc_com_ps.h" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
        copy    . \src\tpcc_com_ps.h    .. \tpcc_com_all \src\

# End Custom Build

!ELSEIF  "$(CFG)" == "tpcc_com_ps   - Win32 Debug"

# PROP BASE Use_MFC 0
# PROP BASE Use_De bug_Libraries 1
# PROP BASE Output_Dir "Debug"
# PROP BASE Intermediate_Dir "Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \obj"
# PROP Ignore_Export_Lib 0
# PROP Target_D ir ""
# ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS"
/YX /FD /c
# ADD CPP /nologo /ZI /Od /D "WIN32" /D "_DEBUG" /D _WIN32_WINNT=0x0400 /D
"REGISTER_PROXY_DLL" /FD /c
# ADD BASE MTL /nologo /D " DEBUG" /mktyplib203 /o "NUL"    /win32
# ADD MTL /nologo /D " DEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d " DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib g  di32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

odbc32.lib odbccp32.lib /nologo /subsystem:windows /debug /machine:I386
/pdbtype:sept
# ADD LINK32 kernel32.lib rpcndr.lib rpcns4.lib rpcrt4.lib oleaut32.lib uuid    .lib
/nologo /entry:"DllMain" /dll /debug /machine:IX86

/def:". \src\tpcc_com_ps.def" /pdbtype:sept
# SUBTRACT LINK32 /pdb:none
# Begin Custom Build - Copying tpcc_com_ps.h
InputPath=. \bin\tpcc_com_ps.dll
SOURCE="$(InputPath)"

"..\tpcc_com_all \src\tpcc_com_ps.h" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
        copy    . \src\tpcc_com_ps.h    .. \tpcc_com_all \src\

# End Custom Build

!ENDIF

# Begin Target

# Name "tpcc_com_ps  - Win32 Release"
# Name "tpcc_com_ps  - Win32 Debug"
# Begin Group "Source"

# PROP Default_Filter ""
# Begin Source File

SOURCE=. \src\dlldata.c
# End Source File
# Begin Source File

SOURCE=. \src\tpcc_com_ps.def
# PROP Exclude_From_Build 1
# End Source File
# Begin Source File

SOURCE=. \src\tpcc_com_ps.idl

!IF  "$(CFG)" == "tpcc_com_ps   - Win32 Release"

# PROP Ignore_Default_Tool 1
# Begin Custom Build
InputPath=. \src\tpcc_com_ps.idl

BuildCmds= \
            midl /Oicf /h "tpcc_com_ps.h" /iid "tpcc_com_ps_i.c"
".\src\tpcc_com_ps.idl"    /out ". \src"

".\src\tpcc_com_ps.h" : $(SOURCE) "$(INTDIR)" "$(OUTDI  R)"
   $(BuildCmds)

".\src\tpcc_com_ps_i.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\dlldata.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_ps_p.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)
# End Custom Build

!ELSEIF  "$(CFG)" == "tpcc_com_ps   - Win32 Debug"

# PROP Ignore_Default_Tool 1
# Begin Custom Build
InputPath=. \src\tpcc_com_ps.idl

BuildCmds= \
            midl /Oicf /h "tpcc_com_ps.h" /iid "tpcc_com_ps_i.c"
".\src\tpcc_com_ps.idl"    /out ". \src"

".\src\tpcc_com_ps.h" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_ps_i.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\dlldata.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_ps_p.c" : $(SOURCE) "$(  INTDIR)" "$(OUTDIR)"
   $(BuildCmds)
# End Custom Build

!ENDIF

# End Source File
# Begin Source File

SOURCE=. \src\tpcc_com_ps_i.c
# End Source File
# Begin Source File

SOURCE=. \src\tpcc_com_ps_p.c
# End Source File
# End Group
# End Target
# End Project
```

tpcc_com_ps/src/dlldata.c

```
/*********************************************************
   DllData file  -- generated by MIDL compiler

        DO NOT ALTER THIS FILE

   This file is regenerated by MIDL on every IDL file compile.

   To completely recons truct this file, delete it and rerun MIDL
   on all the IDL files in this DLL, specifying this file for the
   /dlldata command line option

*********************************************************/


#include <rpcproxy.h>

#ifdef __cplusplus
extern "C"   {
#endif

EXTERN_PROXY_FILE( tpcc_com_ps )


PROXYFILE_LIST_START
/* Start of list */
  REFERENCE_PROXY_FILE( tpcc_com_ps ),
/* End of list */
PROXYFILE_LIST_END


DLLDATA_ROUTINES( aProxyFileList, GET_DLL_CLSID )

#ifdef __cplusplus
}  /*extern "C" */
#endif

/* end of generated dlldata file */
```

tpcc_com_ps/src/tpcc_com_ps.def

```
LIBRARY      "tpcc_com_ps"

DESCRIPTION  'Proxy/Stub DLL'

EXPORTS
              DllGetClassObject       @1   PRIVATE
              DllCanUnloadNow         @2   PRIVATE
              GetProxyDllInfo         @3   PRIVATE
              DllRegisterServer                    @4            PRIVATE
              DllUnregisterServer                  @5            PRIVATE
```

tpcc_com_ps/src/tpcc_com_ps.h

```
#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the definitions for the interfaces */


 /* File created b y MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for . \src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


/* verify that the <rpcndr.h> version is high enough to compile this file*/
#ifndef __REQUIRED_RPCNDR_H_VERSION__
#define __REQUIRED_RPCNDR_H_VERSION__ 440
#endif

#include "rpc.h"
#include "rpcndr.h"

#ifndef __RPCNDR_H_VERSION__
#error this stub requires an updated version of <rpcndr.h>
#endif // __RPCNDR_H_VERSION__

#ifndef COM_NO_WINDOWS_H
#include "windows.h"
#include "ole2.h"
#endif /*COM_NO_WINDOWS_H*/

#ifndef __tpcc_com_ps_h__
#define __tpcc_com_ps_h__

/* Forward Declarations */

#ifndef __ITPCC_FWD_DEFINED__
#define __ITPCC_FWD_DEFINED__
typedef interface ITPCC ITPCC;
#endif        /* __ITPCC_FWD_DEFINED__ */


/* header files for imported files */
#include "oaidl.h"
#include "ocidl.h"

#ifdef __cplusplus
extern "C"{
#endif

void __RPC_FAR * __RPC_USER MIDL_user_allocate(size_t);
void __RPC_USER MIDL_user_free( void __RPC_FAR   * );

/* interface __MIDL_itf_tpcc_com_ps_0000 */
/* [local] */



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;

#ifndef __ITPCC_INTERFACE_DEFINED__
#define __ITPCC_INTER FACE_DEFINED__

/* interface ITPCC */
/* [unique][helpstring][uuid][oleautomation][object] */


EXTERN_C const IID IID_ITPCC;

#if defined(__cplusplus) && !defined(CINTERFACE)

    MIDL_INTERFACE("FEEE6AA2 -84B1-11d2-BA47-00C04FBFE08B")
    ITPCC : pub lic IUnknown
    {
    public:
        virtual HRESULT __stdcall NewOrder(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Payment(
            /* [in] */ VARIANT  txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Delivery(
```

```
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcal  l StockLevel(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall OrderStatus(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_ou  t) = 0;

        virtual HRESULT __stdcall CallSetComplete( void) = 0;

    };

#else       /* C style interface */

    typedef struct ITPCCVtbl
    {
        BEGIN_INTERFACE

        HRESULT ( STDMETHODCALLTYPE __RPC_FAR *QueryInte  rface )(
            ITPCC __RPC_FAR * This,
            /* [in] */ REFIID riid,
            /* [iid_is][out] */ void __RPC_FAR *__RPC_FAR *ppvObject);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *AddRef )(
            ITPCC __RPC_FAR * This);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *Release )(
            ITPCC __RPC_FAR * This);

        HRESULT ( __stdcall __RPC_FAR *NewOrder )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [ou t] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Payment )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdc all __RPC_FAR *Delivery )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *StockLevel )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *OrderStatus )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VA RIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *CallSetComplete )(
            ITPCC __RPC_FAR * This);

        END_INTERFACE
    } ITPCCVtbl;

    interface ITPCC
    {
        CONST_VTBL struct ITPCCVtbl __RPC_FAR *lp  Vtbl;
    };


#ifdef COBJMACROS


#define ITPCC_QueryInterface(This,riid,ppvObject)        \
    (This)->lpVtbl  -> QueryInterface(This,riid,ppvObject)

#define ITPCC_AddRef(This)  \
    (This)->lpVtbl  -> AddRef(This)

#define ITPCC_Release(This)  \
    (This)->lpVtbl  -> Release(This)


#define ITPCC_NewOrder(This,txn_in,txn_out)              \
    (This)->lpVtbl  -> NewOrder(This,txn_in,txn_out)

#define ITPCC_Payment(This,txn_in,txn_out)               \
    (This)->lpVtbl  -> Payment(This,txn_in,txn_out)

#define ITPCC_Delivery(This,txn_  in,txn_out)            \
    (This)->lpVtbl  -> Delivery(This,txn_in,txn_out)

#define ITPCC_StockLevel(This,txn_in,txn_out)            \
    (This)->lpVtbl  -> StockLevel(This,txn_in,txn_out)

#define ITPCC_OrderStatus(This,txn_in,txn_out)           \
    (This)->lpVtbl  -> OrderStatus(Thi s,txn_in,txn_out)

#define ITPCC_CallSetComplete(This)       \
    (This)->lpVtbl  -> CallSetComplete(This)

#endif /* COBJMACROS */


#endif       /* C style interface */


HRESULT __stdcall ITPCC_NewOrder_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT t xn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_NewOrder_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Payment_Prox  y(
    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 *_pRp cChannelBuffer,
    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_StockLeve  l_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 P rototypes 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 * );
void                      __RPC_USER  VARIANT_UserFree(     unsig   ned long
__RPC_FAR *, VARIANT __RPC_FAR * );

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif
```

tpcc_com_ps/src/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
        {

    HRESULT _stdcall NewOrder

        (

        [in] VARIANT  txn_in,

        [out] VARIANT *txn_out

        );

    HRESULT _stdcall Payment

        (

        [in] VARIANT txn_in,

        [out] VARIANT *txn_out

        );

    HRESULT _stdcall Delivery

        (

        [in] VARIANT txn_in ,

        [out] VARIANT *txn_out

        );

    HRESULT _stdcall StockLevel

        (

        [in] VARIANT txn_in,

        [out] VARIANT *txn_out

        );

    HRESULT _stdcall OrderStatus

        (

        [in] VARIANT txn_in,

        [out] VARIANT *txn_ out

        );

    HRESULT _stdcall CallSetComplete

        (

        );

};      // interface ITPCC
```

tpcc_com_ps/src/tpcc_com_ps_i.c

```
#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the IIDs a  nd CLSIDs */

/* link this file in with the server and any clients */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for . \src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b  run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
```

```
*/
//@@MIDL_FILE_HE ADING(  )

#if !defined(_M_IA64) && !defined(_M_AXP64)

#ifdef __cplusplus
extern "C"{
#endif


#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef .h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)    \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned l ong x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,  b5,b6,b7,b8)  \
        const type name = {l,w1,w2,{b1,b2,b3,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
IID_ITPCC,0xFEEE6AA2,0x84B1,0x11d2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



#endif /* !defined(_M_IA64) && !defined(_M_AXP64)*/


#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the IIDs and CLSIDs */

/* link this file in with the server and any clients */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for . \src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext,
robust
    error checks: allocation ref bounds_c  heck enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if defined(_M_IA64) || defined(_M_AXP64)

#ifdef __cplusplus
extern "C"{
#endif


#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3   ,b4,b5,b6,b7,b8)  \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)  \
        const type name = {l,w1,w2,{b1,b2,b3,b4,  b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
IID_ITPCC,0xFEEE6AA2,0x84B1,0x11d2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



#endif /* defined(_M_IA64) || defined(_M_AXP64)*/
```

tpcc_com_ps/src/tpcc_com_ps_p.c

```
#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the proxy stub code */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for . \src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selecta  ny), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if !defined(_M_IA64) && !defined(_M_AXP64)
#define USE_STUBLESS_PROXY


/* verify that the <rpcproxy.h> version is high enough to compile this file*/
#ifndef __REDQ_RPCPROXY_H_VERSION__
#define __REQUIRED_RPCPROXY_H_VERSION__ 440
#endif


#include "rpcproxy.h"
#ifndef __RPCPROXY_H_VERSION__
#error this stub requires an updated version of <rpcproxy.h>
#endif // __RPCPROXY_H_VERSION__


#include "tpcc_com_ps.h"

#define TYPE_FORMAT_STRING_SIZE   997
#define PROC_FORMAT_STRING_SIZE   193
#define TRANSMIT_AS_TABLE_SIZE    0
#define WIRE_MARSHAL_TABLE_SIZE   1

typedef struct _MID L_TYPE_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ TYPE_FORMAT_STRING_SIZE ];
    } MIDL_TYPE_FORMAT_STRING;

typedef struct _MIDL_PROC_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ PROC_FORMAT_STRING_SIZ  E ];
    } MIDL_PROC_FORMAT_STRING;


extern const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;


/* Standard interface: __MIDL_itf_tpcc_com_ps_0000, ver. 0.0,
   GUID={0x00000000,0x0000,0x0  000,{0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00}} */


/* Object interface: IUnknown, ver. 0.0,
   GUID={0x00000000,0x0000,0x0000,{0xC0,0x00,0x00,0x00,0x00,0x00,0x00,0x46}} */


/* Object interface: ITPCC, ver. 0.0,
   GUID={0xFEEE6AA2,0x84B1,0x11d2,{0xBA,0x4  7,0x00,0xC0,0x4F,0xBF,0xE0,0x8B}} */


extern const MIDL_STUB_DESC Object_StubDesc;


extern const MIDL_SERVER_INFO ITPCC_ServerInfo;

#pragma code_seg(".orpc")
static const unsigned short ITPCC_FormatStringOffsetTable[] =
    {
    0,
    34,
    68,
    102,
    136,
    170
    };

static const MIDL_SERVER_INFO ITPCC_ServerInfo =
    {
    &Object_StubDesc,
    0,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[  -3],
    0,
    0,
    0,
    0
    };

static const MIDL_STUBLESS_PR OXY_INFO ITPCC_ProxyInfo =
    {
    &Object_StubDesc,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[  -3],
    0,
    0,
    0
    };

CINTERFACE_PROXY_VTABLE(9) _ITPCCProxyVtbl =
{
    &ITPCC_ProxyInfo,
    &IID_ITPCC,
    IUnknown_QueryInterface_Proxy,
    IUnknown_AddRef_Proxy,
    IUnknown_Release_Proxy ,
    (void *) -1 /* ITPCC::NewOrder */ ,
    (void *) -1 /* ITPCC::Payment */ ,
    (void *) -1 /* ITPCC::Delivery */ ,
    (void *) -1 /* ITPCC::StockLevel */ ,
    (void *) -1 /* ITPCC::OrderStatus */ ,
    (void *) -1 /* ITPCC::CallSetComplete */
};

const CInterfaceStubVtbl _ITPCCStubVtbl =
{
    &IID_ITPCC,
    &ITPCC_ServerInfo,
    9,
    0, /* pure interpreted */
    CStdStubBuffer_METHODS
};

extern const USER_MARSHAL_ROUTINE_  QUADRUPLE
UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ];

static const MIDL_STUB_DESC Object_StubDesc =
    {
    0,
    NdrOleAllocate,
    NdrOleFree,
    0,
    0,
    0,
    0,
    0,
    __MIDL_TypeFormatString.Format,
    1, /* -error bounds_check  flag */
    0x20000, /* Ndr library version */
    0,
    0x5030118, /* MIDL Version 5.3.280 */
    0,
    UserMarshalRoutines,
    0,  /* notify & notify_flag routine table */
    0x1, /* MIDL flag */
    0,  /* Reserved3 */
    0,  /* Reserved4 */
    0   /* Reserved5 */
    };

#pragma data_seg(".rdata")

static const USER_MARSHAL_ROUTINE_QUADRUPLE
UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ] =
        {

            {
            VARIANT_UserSize
            ,VARIANT_UserMarshal
            ,VARIANT_UserUnmarshal
            ,VARIANT_UserFree
            }

        };


#if !defined(__RPC_WIN32__)
```

```
#error  Invalid build platform for this stub.
#endif

#if !(TARGET_IS_NT40_OR_LATER)
#error You need a Windows NT 4.0 or later to run this stub    because it uses these
features:
#error    -Oif or -Oicf, [wire_marshal] or [user_marshal] attribute.
#error However, your C/C++ compilation flags indicate you intend to run this app
on earlier systems.
#error This app will die there with the RPC_X_WRONG_STU   B_VERSION error.
#endif


static const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString =
    {
        0,
        {

              /* Procedure NewOrder */

                                                0x33,                   /*
FC_AUTO_HANDLE */
                                                0x6c,                   /* Old Flags:
object, Oi2 */
/*  2 */        NdrFcLong( 0x0 ),               /* 0 */
/*  6 */        NdrFcShort( 0x3 ),              /* 3 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/*  8 */        NdrFcShort( 0x1c ),             /* x86 Stack size/offset = 28 */
#else
                                                NdrFcShort( 0x20 ),     /*  MIPS
Stack size/offset = 32 */
#endif
#else
                                                NdrFcShort( 0x20 ),     /* PPC Stack
size/offset = 32 */
#endif
#else
                                                NdrFcShort( 0x28 ),     /* Alpha
Stack size/offset = 40 */
#endif
/* 10 */        NdrFcShort( 0x0 ),              /* 0 */
/* 12 */        NdrFcShort( 0x8 ),              /* 8 */
/* 14 */        0x7,                            /* Oi2 Flags:  srv must size, clt must
size, has return, */
                                                0x3,                    /* 3 */

              /* Parameter txn_in */

/* 16 */        NdrFcShort( 0x8b ),             /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 18 */        NdrFcShort( 0x4 ),              /* x86 Stack size/offset = 4 */
#else
                                                NdrFcShort( 0x8 ),      /*  MIPS
Stack size/offset = 8 */
#endif
#else
                                                NdrFcShort( 0x8 ),      /* PPC Stack
size/offset = 8 */
#endif
#else
                                                NdrFcShort( 0x8 ),      /* Alpha
Stack size/offset = 8 */
#endif
/* 20 */        NdrFcShort( 0x3c8 ),            /* Type Offset=968 */

              /* Parameter txn_out */

/* 22 */        NdrFcShort( 0x4113 ),           /* Flags:  must size, must free, out,
simple ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 24 */        NdrFcShort( 0x14 ),             /* x86 Stack size/offset = 20 */
#else
                                                NdrFcShort( 0x18 ),     /*  MIPS
Stack size/ offset = 24 */
#endif
#else
                                                NdrFcShort( 0x18 ),     /* PPC Stack
size/offset = 24 */
#endif
#else
                                                NdrFcShort( 0x18 ),     /* Alpha
Stack size/offset = 24 */
#endif
/* 26 */        NdrFcShort( 0x3da ),            /* Type Offset=986 */

              /* Return value */

/* 28 */        NdrFcShort(  0x70 ),            /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 30 */        NdrFcShort( 0x18 ),             /* x86 Stack size/offset = 24 */
#else
                                                NdrFcShort( 0x1c ),     /*  MIPS
Stack size/offset = 28 */
#endif
#else
                                                NdrFcShort( 0x1c  ),    /* PPC Stack
size/offset = 28 */
#endif
#else
                                                NdrFcShort( 0x20 ),     /* Alpha
Stack size/offset = 32 */
#endif
/* 32 */        0x8,                            /* FC_LONG */
                                                0x0,                    /* 0 */

              /* Procedure Payment */

/* 34 */        0x33,                           /* FC_AUTO_HANDLE */
                                                0x6c,                   /* Old Flags:
object, Oi2 */
/* 36 */        NdrFcLong( 0x0 ),               /* 0 */
/* 40 */        NdrFcShort( 0x4 ),              /* 4 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 42 */        NdrFcShort( 0x1c ),             /* x86 Stack size/offset = 28 */
#else
                                                NdrFcShort( 0x20 ),     /*  MIPS
Stack size/offset = 32 */
#endif
#else
                                                NdrFcShort( 0x20 ),     /* PPC Stack
size/offset = 32 */
#endif
#else
                                                NdrFcShort( 0x28 ),     /* Alpha
Stack size/offset = 40 */
#endif
/* 44 */        NdrFcShort( 0x0 ),              /* 0 */
/* 46 */        NdrFcShort( 0x8 ),              /* 8 */
/* 48 */        0x7,                            /* Oi2 Flags:  srv mu st size, clt must
size, has return, */
                                                0x3,                    /* 3 */

              /* Parameter txn_in */

/* 50 */        NdrFcShort( 0x8b ),             /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 52 */        NdrFcShort( 0x4 ),              /* x86 Stack size/ offset = 4 */
#else
                                                NdrFcShort( 0x8 ),      /*  MIPS
Stack size/offset = 8 */
#endif
#else
                                                NdrFcShort( 0x8 ),      /* PPC Stack
size/offset = 8 */
#endif
#else
                                                NdrFcShort( 0x8 ),      /* Alpha
Stack size/offset = 8 */
#endif
/* 54 */        NdrFcShort( 0x3c8 ),            /* Type Offset=968 */

              /* Parameter txn_out */

/* 56 */        NdrFcShort( 0x4113 ),           /* Flags:  must size, must free, out,
simple ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 58 */        NdrFcShort( 0x14 ),             /* x86 Stack size/offset = 20 */
#else
                                                NdrFcShort( 0x18 ),     /*  MIPS
Stack size/offset = 24 */
#endif
#else
                                                NdrFcShort( 0x18 ),     /* PPC Stack
size/offset = 24 */
#endif
#else
                                                NdrFcShort( 0x18 ),     /* Alpha
Stack size/offset = 24 */
#endif
/* 60 */        NdrFcShort( 0x3da ),            /* Type Offset =986 */

              /* Return value */

/* 62 */        NdrFcShort( 0x70 ),             /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 64 */        NdrFcShort( 0x18 ),             /* x86 Stack size/offset = 24 */
#else
                                                NdrFcShort( 0x1c ),     /*  MIPS
Stack si ze/offset = 28 */
#endif
#else
                                                NdrFcShort( 0x1c ),     /* PPC Stack
size/offset = 28 */
#endif
#else
                                                NdrFcShort( 0x20 ),     /* Alpha
Stack size/offset = 32 */
#endif
/* 66 */        0x8,                            /* FC_LONG */
                                                0x0,                    /* 0 */

              /* Procedure Delivery */

/* 68 */        0x33,                           /* FC_AUTO_HANDLE */
                                                0x6c,                   /* Old Flags:
object, Oi2 */
/* 70 */        NdrFcLong( 0x0 ),               /* 0 */
/* 74 */        NdrFcShort( 0x5 ),              /* 5 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 76 */        NdrFcShort( 0x1c ),             /* x86 Stack size/offset = 28 */
#else
                                                NdrFcShort( 0x20 ),     /*  MIPS
Stack size/offset = 32 */
#endif
#else
                                                NdrFcShort( 0x20 ),     /* PPC Stack
size/offset = 32 */
#endif
#else
                                                NdrFcShort( 0x28 ),     /* Alpha
Stack size/offset = 40 */
#endif
/* 78 */        NdrFcShort( 0x0 ),              /* 0 */
/* 80 */        NdrFcShort(  0x8 ),             /* 8 */
/* 82 */        0x7,                            /* Oi2 Flags:  srv must size, clt must
size, has return, */
                                                0x3,                    /* 3 */

              /* Parameter txn_in */

/* 84 */        NdrFcShort( 0x8b ),             /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MI PS_)
/* 86 */        NdrFcShort( 0x4 ),              /* x86 Stack size/offset = 4 */
#else
                                                NdrFcShort( 0x8 ),      /*  MIPS
Stack size/offset = 8 */
#endif
#else
                                                NdrFcShort( 0x8 ),      /* PPC Stack
size/offset = 8 */
#endif
#else
                                                NdrFcShort( 0x8 ),      /* Alpha
Stack size/offset  = 8 */
#endif
/* 88 */        NdrFcShort( 0x3c8 ),            /* Type Offset=968 */

              /* Parameter txn_out */

/* 90 */        NdrFcShort( 0x4113 ),           /* Flags:  must size, must free, out,
simple ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 92 */        NdrFcShort( 0x14 ),             /* x86 Stack size/offset = 20 */
#else
                                                NdrFcShort( 0x18 ),     /*  MIPS
Stack size/offset = 24 */
#endif
#else
                                                NdrFcShort( 0x18 ),     /* PPC Stack
size/offset = 24 */
#endif
#else
                                                NdrFcShort( 0x18 ),     /* Alpha
Stack size/offset = 24 */
#endif
/* 94 */        NdrFcShort( 0x3da ),            /* Type Offset=986 */

              /* Return value */

/* 96 */        NdrFcShort( 0x70 ),             /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 98 */        NdrFcShort( 0x18 ),             /* x86 Stack size/offset = 2 4 */
#else
                                                NdrFcShort( 0x1c ),     /*  MIPS
Stack size/offset = 28 */
#endif
#else
                                                NdrFcShort( 0x1c ),     /* PPC Stack
size/offset = 28 */
#endif
#else
                                                NdrFcShort( 0x20 ),     /* Alpha
Stack size/offset = 32 */
#endif
/* 100 */       0x8,                            /* FC_LONG */
                                                0x0,                    /* 0 */

              /* Procedure StockLevel */

/* 102 */       0x33,                           /* FC_AUTO_HANDLE */
                                                0x6c,                   /* Old Flags:
object, Oi2 */
/* 104 */       NdrFcLong( 0x0 ),               /* 0 */
/* 108 */       NdrFcShort( 0x6 ),              /* 6 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 110 */       NdrFcShort( 0x1c ),             /* x86 Stack size/offset = 28 */
#else
                                                NdrFcShort( 0x20 ),     /*  MIPS
Stack size/offset = 32 */
#endif
#else
                                                NdrFcShort( 0x20 ),     /* PPC Stack
size/offset = 32 */
#endif
#else
                                                NdrFcShort( 0x28 ),     /* Alpha
Stack size/offset = 40 */
#endif
/* 112 */       NdrFcShort( 0x0 ),              /* 0 */
/* 114 */       NdrFcShort( 0x8 ),              /* 8 */
/* 116 */       0x7,                            /* Oi2 Flags:  srv must size, clt must
```

```
size, has return, */
                                        0x3,                    /* 3 */

            /* Parameter txn_in */

/* 118 */      NdrFcShort( 0x8b ),      /* Flags:  must size, must free,   in, by
val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 120 */      NdrFcShort( 0x4 ),       /* x86 Stack size/offset = 4 */
#else
                                        NdrFcShort( 0x8 ),      /*  MIPS
Stack size/offset = 8 */
#endif
#else
                                        NdrFcShort( 0x8 ),      /* PPC Stack
size/offset = 8 */
#endif
#else
                                        NdrFcShort( 0x8 ),      /* Alpha
Stack size/offset = 8 */
#endif
/* 122 */      NdrFcShort( 0x3c8 ),     /* Type Offset=968 */

            /* Parameter txn_out */

/* 124 */      NdrFcShort( 0x4113 ),    /* Flags:  must size, must free, out,
simple ref, srv alloc size=16  */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 126 */      NdrFcShort( 0x14 ),      /* x86 Stack size/offset = 20 */
#else
                                        NdrFcShort( 0x18 ),     /*  MIPS
Stack size/offset = 24 */
#endif
#else
                                        NdrFcShort( 0x18 ),     /* PPC Stack
size/offset = 24 */
#endif
#else
                                        NdrFcShort( 0x18 ),     /* Alpha
Stack size/offset = 24 */
#endif
/* 128 */      NdrFcShort( 0x3da ),     /* Type Offset=986 */

            /* Return value */

/* 130 */      NdrFcShort( 0x70 ),      /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 132 */      NdrFcShort( 0x18 ),      /* x86 Stack size/offset = 24 */
#else
                                        NdrFcShort( 0x1c ),     /*  MIPS
Stack size/offset = 28 */
#endif
#else
                                        NdrFcShort( 0x1c ),     /* PPC Stack
size/offset = 28 */
#endif
#else
                                        NdrFcShort( 0x20 ),     /* Alpha
Stack size/offset = 32 */
#endif
/* 134 */      0x8,                     /* FC_LONG */
                                        0x0,                    /* 0 */

            /* Procedure OrderStatus */

/* 136 */      0x33,                    /* FC_AUTO_HANDLE */
                                        0x6c,                   /* Old Flags:
object, Oi2 */
/* 138 */      NdrFcLong( 0x0 ),        /* 0 */
/* 142 */      NdrFcShort( 0x7 ),       /* 7 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 144 */      NdrFcShort( 0x1c ),      /* x86 Stack size/offset = 28 */
#else
                                        NdrFcShort( 0x20 ),     /*  MIPS
Stack size/offset = 32 */
#endif
#else
                                        NdrFcShort( 0x20 ),     /* PPC Stack
size/offset = 32 */
#endif
#else
                                        NdrFcShort( 0x28 ),     /* Alpha
Stack size/offset = 40 */
#endif
/* 146 */      NdrFcShort( 0x0 ),       /* 0 */
/* 148 */      NdrFcShort( 0x8 ),       /* 8 */
/* 150 */      0x7,                     /* Oi2 Flags:  srv must size, clt must
size, has return, */
                                        0x3,                    /* 3 */

            /* Parameter txn_in */

/* 152 */      NdrFcShort( 0x8b ),      /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 154 */      NdrFcShort( 0x4 ),       /* x86 Stack size/offset = 4 */
#else
                                        NdrFcShort( 0x8 ),      /*  MIPS
Stack size/offset = 8  */
#endif
#else
                                        NdrFcShort( 0x8 ),      /* PPC Stack
size/offset = 8 */
#endif
#else
                                        NdrFcShort( 0x8 ),      /* Alpha
Stack size/offset = 8 */
#endif
/* 156 */      NdrFcShort( 0x3c8 ),     /* Type Offset=968 */

            /* Parameter txn_out */

/* 158 */      NdrFcShort( 0x4113 ),    /* Flags:  must size, must free, out,
simple ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 160 */      NdrFcShort( 0x14 ),      /* x86 Stack size/offset = 20 */
#else
                                        NdrFcShort( 0x18 ),     /*  MIPS
Stack size/offset = 24 */
#endif
#else
                                        NdrFcShort( 0x18 ),     /* PPC Stack
size/offset = 24 */
#endif
#else
                                        NdrFcShort( 0x18 ),     /* Alpha
Stack size/offset = 24 */
#endif
/* 162 */      NdrFcShort( 0x3da ),     /* Type Offset=986 */

            /* Return value */

/* 164 */      NdrFcShort( 0x70 ),      /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 166 */      NdrFcShort( 0x18 ),      /* x86 Stack size/offset = 24 */
#else
                                        NdrFcShort( 0x1c ),     /*  MIPS
Stack size/offset = 28 */
#endif
#else
                                        NdrFcShort( 0x1c ),     /* PPC Stack
size/offset = 28 */
#endif
#else
                                        NdrFcShort( 0x20 ),     /* Alpha
Stack size/offset = 32 */
#endif
/* 168 */      0x8,                     /* FC_LONG */
                                        0x0,                    /* 0 */

            /* Procedure CallSetComplete */

/* 170 */      0x33,                    /* FC_AUTO_HANDLE */
                                        0x6c,                   /* Old Flags:
object, Oi2 */
/* 172 */      NdrFcLong( 0x0 ),        /* 0 */
/* 176 */      NdrFcShort( 0x8 ),       /* 8 */
#ifndef _ALPHA_
/* 178 */      NdrFcShort( 0x8 ),       /* x86, MIPS, PPC Stack size/offset = 8
*/
#else
                                        NdrFcShort( 0x10 ),     /* Alpha
Stack size/offset = 16 */
#endif
/* 180 */      NdrFcShort( 0x0 ),       /* 0 */
/* 182 */      NdrFcShort( 0x8 ),       /* 8 */
/* 184 */      0x4,                     /* Oi2 Flags:  has return, */
                                        0x1,                    /* 1 */

            /* Return value */

/* 186 */      NdrFcShort( 0x70 ),      /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 188 */      NdrFcShort( 0x4 ),       /* x86, MIPS, PPC Stack size/offset = 4
*/
#else
                                        NdrFcShort( 0x8 ),      /* Alpha
Stack size/offset = 8 */
#endif
/* 190 */      0x8,                     /* FC_LONG */
                                        0x0,                    /* 0 */

                                        0x0

        }
    };

static const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString =
    {
        0,
        {
                                        NdrFcShort( 0x0 ),      /* 0 */
/*  2 */
                                        0x12, 0x0,    /* FC_UP */
/*  4 */       NdrFcShort( 0x3b0 ),     /* Offset= 944 (948) */
/*  6 */
                                        0x2b,                   /*
FC_NON_ENCAPSULATED_UNION */
                                        0x9,                    /* FC_ULONG
*/
/*  8 */       0x7,                     /* Corr desc: FC_USHORT */
                                        0x0,                    /*  */
/* 10 */       NdrFcShort( 0xfff8 ),    /* -8 */
/* 12 */       NdrFcShort( 0x2 ),       /* Offset= 2 (14) */
/* 14 */       NdrFcShort( 0x10 ),      /* 16 */
/* 16 */       NdrFcShort( 0x2b ),      /* 43 */
/* 18 */       NdrFcLong( 0x3 ),        /* 3 */
/* 22 */       NdrFcShort( 0x8008 ),    /* Simple arm  type: FC_LONG */
/* 24 */       NdrFcLong( 0x11 ),       /* 17 */
/* 28 */       NdrFcShort( 0x8001 ),    /* Simple arm type: FC_BYTE */
/* 30 */       NdrFcLong( 0x2 ),        /* 2 */
/* 34 */       NdrFcShort( 0x8006 ),    /* Simple arm type: FC_SHORT */
/* 36 */       NdrFcLong( 0x4 ),        /* 4 */
/* 40 */       NdrFcShort( 0x800a ),    /* Simple arm type: FC_FLOAT */
/* 42 */       NdrFcLong( 0x5 ),        /* 5 */
/* 46 */       NdrFcShort( 0x800c ),    /* Simple arm type: FC_DOUBLE */
/* 48 */       NdrFcLong( 0xb ),        /* 11 */
/* 52 */       NdrFcShort( 0x8006 ),    /* Simple arm type: FC_SHORT */
/* 54 */       NdrFcLong( 0xa ),        /* 10 */
/* 58 */       NdrFcShort( 0x8008 ),    /* Simple arm type: FC_LONG */
/* 60 */       NdrFcLong( 0x6 ),        /* 6 */
/* 64 */       NdrFcShort( 0xd6 ),      /* Offset= 214 (278) */
/* 66 */       NdrFcLong( 0x7 ),        /* 7 */
/* 70 */       NdrFcShort( 0x800c ),    /* Simple arm type: FC_DOUBLE */
/* 72 */       NdrFcLong( 0x8 ),        /* 8 */
/* 76 */       NdrFcShort( 0xd0 ),      /* Offset= 208 (284) */
/* 78 */       NdrFcLong( 0xd ),        /* 13 */
/* 82 */       NdrFcShort( 0xe2 ),      /* Offset= 226 (308) */
/* 84 */       NdrFcLong( 0x9 ),        /* 9 */
/* 88 */       NdrFcShort( 0xee ),      /* Offset= 238 (326) */
/* 90 */       NdrFcLong( 0x2000 ),     /* 8192 */
/* 94 */       NdrFcShort( 0xfa ),      /* Offset= 250 (344) */
/* 96 */       NdrFcLong( 0x24 ),       /* 36 */
/* 100 */      NdrFcShort( 0x308 ),     /* Offset= 776 (876) */
/* 102 */      NdrFcLong( 0x4024 ),     /* 16420 */
/* 106 */      NdrFcShort( 0x302 ),     /* Offset= 770 (876) */
/* 108 */      NdrFcLong( 0x4011 ),     /* 16401 */
/* 112 */      NdrFcShort( 0x300 ),     /* Offset= 768 (880) */
/* 114 */      NdrFcLong( 0x4002 ),     /* 16386 */
/* 118 */      NdrFcShort( 0x2fe ),     /* Offset= 766 (884 ) */
/* 120 */      NdrFcLong( 0x4003 ),     /* 16387 */
/* 124 */      NdrFcShort( 0x2fc ),     /* Offset= 764 (888) */
/* 126 */      NdrFcLong( 0x4004 ),     /* 16388 */
/* 130 */      NdrFcShort( 0x2fa ),     /* Offset= 762 (892) */
/* 132 */      NdrFcLong( 0x4005 ),     /* 16389 */
/* 136 */      NdrFcShort( 0x2f8 ),     /* Offset= 760 (896) */
/* 138 */      NdrFcLong( 0x400b ),     /* 16395 */
/* 142 */      NdrFcShort( 0x2e6 ),     /* Offset= 742 (884) */
/* 144 */      NdrFcLong( 0x400a ),     /* 16394 */
/* 148 */      NdrFcShort( 0x2e4 ),     /* Offset= 740 (888) */
/* 150 */      NdrFcLong( 0x4006 ),     /* 16390 */
/* 154 */      NdrFcShort( 0x2ea ),     /* Offset= 746 (900) */
/* 156 */      NdrFcLong( 0x4007 ),     /* 16391 */
/* 160 */      NdrFcShort( 0x2e0 ),     /* Offset= 736 (896) */
/* 162 */      NdrFcLong( 0x4008 ),     /* 16392 */
/* 166 */      NdrFcShort( 0x2e2 ),     /* Offset= 738 (904) */
/* 168 */      NdrFcLong( 0x400d ),     /* 16397 */
/* 172 */      NdrFcShort( 0x2e0 ),     /* Offset= 736 (908) */
/* 174 */      NdrFcLong( 0x4009 ),     /* 16393 */
/* 178 */      NdrFcShort( 0x2de ),     /* Offset= 734 (912) */
/* 180 */      NdrFcLong( 0x6000 ),     /* 24576 */
/* 184 */      NdrFcShort( 0x2dc ),     /* Offset= 732 (916) */
/* 186 */      NdrFcLong( 0x400c ),     /* 16396 */
/* 190 */      NdrFcShort( 0x2da ),     /* Offset= 730 (920) */
/* 192 */      NdrFcLong( 0x10 ),       /* 16 */
/* 196 */      NdrFcShort( 0x8002 ),    /* Simple arm type: FC_CHAR * /
/* 198 */      NdrFcLong( 0x12 ),       /* 18 */
/* 202 */      NdrFcShort( 0x8006 ),    /* Simple arm type: FC_SHORT */
/* 204 */      NdrFcLong( 0x13 ),       /* 19 */
/* 208 */      NdrFcShort( 0x8008 ),    /* Simple arm type: FC_LONG */
/* 210 */      NdrFcLong( 0x16 ),       /* 22 */
/* 214 */      NdrFcShort( 0x8008 ),    /* Simple arm type: FC_LONG */
/* 216 */      NdrFcLong( 0x17 ),       /* 23 */
/* 220 */      NdrFcShort( 0x8008 ),    /* Simple arm type: FC_LONG */
/* 222 */      NdrFcLong( 0xe ),        /* 14 */
/* 226 */      NdrFcShort( 0x2be ),     /* Offset= 702 (928) */
/* 228 */      NdrFcLong( 0x400e ),     /* 16398 */
/* 232 */      NdrFcShort( 0x2c4 ),     /* Offset= 708 (940) */
/* 234 */      NdrFcLong( 0x4010 ),     /* 16400 */
/* 238 */      NdrFcShort( 0x2c2 ),     /* Offset= 706 (944) */
/* 240 */      NdrFcLong( 0x4012 ),     /* 16402 */
/* 244 */      NdrFcShort( 0x280 ),     /* Offset= 640 (884) */
/* 246 */      NdrFcLong( 0x4013 ),     /* 16403 */
/* 250 */      NdrFcShort( 0x27e ),     /* Offset= 638 (888) */
/* 252 */      NdrFcLong( 0x4016 ),     /* 16406 */
/* 256 */      NdrFcShort( 0x278 ),     /* Offset= 632 (888) */
/* 258 */      NdrFcLong( 0x4017 ),     /* 16407 */
/* 262 */      NdrFcShort( 0x272 ),     /* Offset= 626 (888) */
/* 264 */      NdrFcLong( 0x0 ),        /* 0 */
/* 268 */      NdrFcShort( 0x0 ),       /* Offset= 0 (268) */
/* 270 */      NdrFcLong( 0x1 ),        /* 1 */
/* 274 */      NdrFcShort( 0x0 ),       /* Offset= 0 (274) */
/* 276 */      NdrFcShort( 0xffffffff ),/* Offset= -1 (275) */
/* 278 */
                                        0x15,                   /* FC_STRUCT
*/
                                        0x7,                    /* 7 */
/* 280 */      NdrFcShort( 0x8 ),       /* 8 */
/* 282 */      0xb,                     /* FC_HYPER */
                                        0x5b,                   /* FC_END */
/* 284 */
                                        0x12, 0x0,    /* FC_UP */
/* 286 */      NdrFcShort( 0xc ),       /* Offset= 12 (298) */
/* 288 */
                                        0x1b,                   /* FC_CARRAY
*/
                                        0x1,                    /* 1 */
/* 290 */      NdrFcShort( 0x2 ),       /* 2 */
/* 292 */      0x9,                     /* Corr desc: FC_ULONG */
                                        0x0,                    /*  */
/* 294 */      NdrFcShort( 0xfffc ),    /* -4 */
/* 296 */      0x6,                     /* FC_SHORT */
                                        0x5b,                   /* FC_END */
/* 298 */
                                        0x17,                   /* FC_CSTRUCT
*/
                                        0x3,                    /* 3 */
```

```
/* 300 */     NdrFcShort( 0x8 ),          /* 8 */
/* 302 */     NdrFcShort( 0xfffffff2 ),   /* Offset= -14 (288) */
/* 304 */     0x8,                        /* FC_LONG */
/* 306 */     0x5c,                       /* FC_PAD */
              0x5b,                       /* FC_END */
/* 308 */

              0x2f,                       /* FC_IP */
              0x5a,                       /*
FC_CONSTANT_IID */
/* 310 */     NdrFcLong( 0x0 ),           /* 0 */
/* 314 */     NdrFcShort( 0x0 ),          /* 0 */
/* 316 */     NdrFcShort( 0x0 ),          /* 0 */
/* 318 */     0xc0,                       /* 192 */
              0x0,                        /* 0 */
/* 320 */     0x0,                        /* 0 */
              0x0,                        /* 0 */
/* 322 */     0x0,                        /* 0 */
              0x0,                        /* 0 */
/* 324 */     0x0,                        /* 0 */
              0x46,                       /* 70 */
/* 326 */

              0x2f,                       /* FC_IP */
              0x5a,                       /*
FC_CONSTANT_IID */
/* 328 */     NdrFcLong( 0x20400 ),       /* 132096 */
/* 332 */     NdrFcShort( 0x0 ),          /* 0 */
/* 334 */     NdrFcShort( 0x0 ),          /* 0 */
/* 336 */     0xc0,                       /* 192 */
              0x0,                        /* 0 */
/* 338 */     0x0,                        /* 0 */
              0x0,                        /* 0 */
/* 340 */     0x0,                        /* 0 */
              0x0,                        /* 0 */
/* 342 */     0x0,                        /* 0 */
              0x46,                       /* 70 */
/* 344 */

              0x12, 0x10,   /* FC_UP [pointer_deref] */
/* 346 */     NdrFcShort( 0x2 ),          /* Offset= 2 (348) */
/* 348 */

              0x12, 0x0,    /* FC_UP */
/* 350 */     NdrFcShort( 0x1fc ),        /* Offset= 508 (858) */
/* 352 */

              0x2a,                       /*
FC_ENCAPSULATED_UNION */

              0x49,                       /* 73 */
/* 354 */     NdrFcShort( 0x18 ),         /* 24 */
/* 356 */     NdrFcShort( 0xa ),          /* 10 */
/* 358 */     NdrFcLong( 0x8 ),           /* 8 */
/* 362 */     NdrFcShort( 0x58 ),         /* Offset= 88 (450) */
/* 364 */     NdrFcLong( 0xd ),           /* 13 */
/* 368 */     NdrFcShort( 0x78 ),         /* Offset= 120 (488) */
/* 370 */     NdrFcLong( 0x9 ),           /* 9 */
/* 374 */     NdrFcShort( 0x94 ),         /* Offset= 148 (522) */
/* 376 */     NdrFcLong( 0xc ),           /* 12 */
/* 380 */     NdrFcShort( 0xbc ),         /* Offset= 188 (568) */
/* 382 */     NdrFcLong( 0x24 ),          /* 36 */
/* 386 */     NdrFcShort( 0x114 ),        /* Offset= 276 (662) */
/* 388 */     NdrFcLong( 0x800d ),        /* 32781 */
/* 392 */     NdrFcShort( 0x130 ),        /* Offset= 304 (696) */
/* 394 */     NdrFcLong( 0x10 ),          /* 16 */
/* 398 */     NdrFcShort( 0x148 ),        /* Offset= 328 (726) */
/* 400 */     NdrFcLong( 0x2 ),           /* 2 */
/* 404 */     NdrFcShort( 0x160 ),        /* Offset= 352 (756) */
/* 406 */     NdrFcLong( 0x3 ),           /* 3 */
/* 410 */     NdrFcShort( 0x178 ),        /* Offset= 376 (786) */
/* 412 */     NdrFcLong( 0x14 ),          /* 20 */
/* 416 */     NdrFcShort( 0x190 ),        /* Offset= 400 (816) */
/* 418 */     NdrFcShort( 0xffffffff ),   /* Offset= -1 (417) */
/* 420 */

              0x1b,                       /* FC_CARRAY
*/
              0x3,                        /* 3 */
/* 422 */     NdrFcShort( 0x4 ),          /* 4 */
/* 424 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
              0x0,                        /*  */
/* 426 */     NdrFcShort( 0x0 ),          /* 0 */
/* 428 */

              0x4b,                       /* FC_PP */
              0x5c,                       /* FC_PAD */
/* 430 */

              0x48,                       /*
FC_VARIABLE_REPEAT */

              0x49,                       /*
FC_FIXED_OFFSET */
/* 432 */     NdrFcShort( 0x4 ),          /* 4 */
/* 434 */     NdrFcShort( 0x0 ),          /* 0 */
/* 436 */     NdrFcShort( 0x1 ),          /* 1 */
/* 438 */     NdrFcShort( 0x0 ),          /* 0 */
/* 440 */     NdrFcShort( 0x0 ),          /* 0 */
/* 442 */     0x12, 0x0,    /* FC_UP */
/* 444 */     NdrFcShort( 0xffffff6e ),   /* Offset= -146 (298) */
/* 446 */

              0x5b,                       /* FC_END */

              0x8,                        /* FC_LONG */
/* 448 */     0x5c,                       /* FC_PAD */
              0x5b,                       /* FC_END */
/* 450 */

              0x16,                       /* FC_PSTRUCT
*/
              0x3,                        /* 3 */
/* 452 */     NdrFcShort( 0x8 ),          /* 8 */
/* 454 */

              0x4b,                       /* FC_PP */
              0x5c,                       /* FC_PAD */
/* 456 */

              0x46,                       /*
FC_NO_REPEAT */
```

```
/* 458 */     NdrFcShort( 0x4 ),          /* 4 */
/* 460 */     NdrFcShort( 0x4 ),          /* 4 */
/* 462 */     0x11, 0x0,    /* FC_RP */
/* 464 */     NdrFcShort( 0xfffffffd4 ),  /* Offset= -44 (420) */
/* 466 */

              0x5b,                       /* FC_END */

              0x8,                        /* FC_LONG */
/* 468 */     0x8,                        /* FC_LONG */
              0x5b,                       /* FC_END */
/* 470 */

              0x21,                       /*
FC_BOGUS_ARRAY */

              0x3,                        /* 3 */
/* 472 */     NdrFcShort( 0x0 ) ,         /* 0 */
/* 474 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
              0x0,                        /*  */
/* 476 */     NdrFcShort( 0x0 ),          /* 0 */
/* 478 */     NdrFcLong( 0xffffffff ),    /* -1 */
/* 482 */     0x4c,                       /* FC_EMBEDDED_COMPLEX */
              0x0,                        /* 0 */
/* 484 */     NdrFcShort( 0xffffff 50 ),  /* Offset= -176 (308) */
/* 486 */     0x5c,                       /* FC_PAD */
/* 488 */

              0x1a,                       /*
FC_BOGUS_STRUCT */

              0x3,                        /* 3 */
/* 490 */     NdrFcShort( 0x8 ),          /* 8 */
/* 492 */     NdrFcShort( 0x0 ),          /* 0 */
/* 494 */     NdrFcShort( 0x6 ),          /* Offset= 6 (500) */
/* 496 */     0x8,                        /* FC_LONG */
              0x36,                       /* FC_POINTER
*/
/* 498 */     0x5c,                       /* FC_PAD */
              0x5b,                       /* FC_END */
/* 500 */

              0x11, 0x0,    /* FC_RP */
/* 502 */     NdrFcShort( 0xfffffffe0 ),  /* Offset= -32 (470) */
/* 504 */

              0x21,                       /*
FC_BOGUS_ARR AY */

              0x3,                        /* 3 */
/* 506 */     NdrFcShort( 0x0 ),          /* 0 */
/* 508 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
              0x0,                        /*  */
/* 510 */     NdrFcShort( 0x0 ),          /* 0 */
/* 512 */     NdrFcLong( 0xffffffff ),    /* -1 */
/* 516 */     0x4c,                       /* FC_EMBEDDED_COMPLEX  */
              0x0,                        /* 0 */
/* 518 */     NdrFcShort( 0xffffff40 ),   /* Offset= -192 (326) */
/* 520 */     0x5c,                       /* FC_PAD */
/* 522 */

              0x1a,                       /*
FC_BOGUS_STRUCT */

              0x3,                        /* 3 */
/* 524 */     NdrFcShort( 0x8 ),          /* 8 */
/* 526 */     NdrFcShort( 0x0 ),          /* 0 */
/* 528 */     NdrFcShort( 0x6 ),          /* Offset= 6 (534) */
/* 530 */     0x8,                        /* FC_LONG */
              0x36,                       /* FC_POINTER
*/
/* 532 */     0x5c,                       /* FC_PAD */
              0x5b,                       /* FC_END */
/* 534 */

              0x11, 0x0,    /* FC_RP */
/* 536 */     NdrFcShort( 0xfffffffe0 ),  /* Offset= -32 (504) */
/* 538 */

              0x1b,                       /* FC_CARRAY
*/
              0x3,                        /* 3 */
/* 540 */     NdrFcShort( 0x4 ),          /* 4 */
/* 542 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
              0x0,                        /*  */
/* 544 */     NdrFcShort( 0x0 ),          /* 0 */
/* 546 */

              0x4b,                       /* FC_PP */
              0x5c,                       /* FC_PAD */
/* 548 */

              0x48,                       /*
FC_VARIABLE_REPEAT */

              0x49,                       /*
FC_FIXED_OFFSET */
/* 550 */     NdrFcShort( 0x4 ),          /* 4 */
/* 552 */     NdrFcShort( 0x0 ),          /* 0 */
/* 554 */     NdrFcShort( 0x1 ),          /* 1 */
/* 556 */     NdrFcShort( 0x0 ),          /* 0 */
/* 558 */     NdrFcShort( 0x0 ),          /* 0 */
/* 560 */     0x12, 0x0,    /* FC_UP */
/* 562 */     NdrFcShort( 0x182 ),        /* Offset= 386 (948) */
/* 564 */

              0x5b,                       /* FC_END */

              0x8,                        /* FC_LONG */
/* 566 */     0x5c,                       /* FC_PAD */
              0x5b,                       /* FC_END */
/* 568 */

              0x1a,                       /*
FC_BOGUS_ STRUCT */

              0x3,                        /* 3 */
/* 570 */     NdrFcShort( 0x8 ),          /* 8 */
/* 572 */     NdrFcShort( 0x0 ),          /* 0 */
/* 574 */     NdrFcShort( 0x6 ),          /* Offset= 6 (580) */
/* 576 */     0x8,                        /* FC_LONG */
              0x36,                       /* FC_POINTER
*/
/* 578 */     0x5c,                       /* FC_PAD */
              0x5b,                       /* FC_END */
/* 580 */

              0x11, 0x0,    /* FC_RP */
/* 582 */     NdrFcShort( 0xfffffffd4 ),  /* Offset= -44 (538) */
/* 584 */

              0x2f,                       /* FC_IP */
              0x5a,                       /*
FC_CONSTANT_IID */
/* 586 */     NdrFcLong( 0x2f ),          /* 47 */
/* 590 */     NdrFcShort( 0x0 ),          /* 0 */
/* 592 */     NdrFcShort( 0x0 ),          /* 0 */
/* 594 */     0xc0,                       /* 192 */
              0x0,                        /* 0 */
/* 596 */     0x0,                        /* 0 */
              0x0,                        /* 0 */
/* 598 */     0x0,                        /* 0 */
              0x0,                        /* 0 */
/* 600 */     0x0,                        /* 0 */
              0x46,                       /* 70 */
/* 602 */

              0x1b,                       /* FC_CARRAY
*/
              0x0,                        /* 0 */
/* 604 */     NdrFcShort( 0x1 ),          /* 1 */
/* 606 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
              0x0,                        /*  */
/* 608 */     NdrFcShort( 0x4 ),          /* 4 */
/* 610 */     0x1,                        /* FC_BYTE */
              0x5b,                       /* FC_END */
/* 612 */

              0x1a,                       /*
FC_BOGUS_STRUCT */

              0x3,                        /* 3 */
/* 614 */     NdrFcShort( 0x10 ),         /* 16 */
/* 616 */     NdrFcShort( 0x0 ),          /* 0 */
/* 618 */     NdrFcShort( 0xa ),          /* Offset= 10 (628) */
/* 620 */     0x8,                        /* FC_LONG */
              0x8,                        /* FC_LONG */
/* 622 */     0x4c,                       /* FC_EMBEDDED_COMPLEX */
              0x0,                        /* 0 */
/* 624 */     NdrFcShor t( 0xfffffffd8 ), /* Offset= -40 (584) */
/* 626 */     0x36,                       /* FC_POINTER */
              0x5b,                       /* FC_END */
/* 628 */

              0x12, 0x0,    /* FC_UP */
/* 630 */     NdrFcShort( 0xfffffffe4 ),  /* Offset= -28 (602) */
/* 632 */

              0x1b,                       /* FC_CARRAY
*/
              0x3,                        /* 3 */
/* 634 */     NdrFcShort( 0x4 ),          /* 4 */
/* 636 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
              0x0,                        /*  */
/* 638 */     NdrFcShort( 0x0 ),          /* 0 */
/* 640 */

              0x4b,                       /* FC_PP */
              0x5c,                       /* FC_PAD */
/* 642 */

              0x48,                       /*
FC_VARIABLE_REPEAT */

              0x49,                       /*
FC_FIXED_OFFSET */
/* 644 */     NdrFcShort( 0x4 ),          /* 4 */
/* 646 */     NdrFcShort( 0x0 ),          /* 0 */
/* 648 */     NdrFcShort( 0x1 ),          /* 1 */
/* 650 */     NdrFcShort( 0x0 ),          /* 0 */
/* 652 */     NdrFcShort( 0x0 ),          /* 0 */
/* 654 */     0x12, 0x0,    /* FC_UP */
/* 656 */     NdrFcShort( 0xfffffffd4 ),  /* Offset= -44 (612) */
/* 658 */

              0x5b,                       /* FC_END */

              0x8,                        /* FC_LONG */
/* 660 */     0x5c,                       /* FC_PAD */
              0x5b,                       /* FC_END */
/* 662 */

              0x1a,                       /*
FC_BOGUS_STRUCT */

              0x3,                        /* 3 */
/* 664 */     NdrFcShort( 0x8 ),          /* 8 */
/* 666 */     NdrFcShort( 0x0 ),          /* 0 */
/* 668 */     NdrFcShort( 0x6 ),          /* Offset= 6 (674) */
/* 670 */     0x8,                        /* FC_LONG */
              0x36,                       /* FC_POINTER
*/
/* 672 */     0x5c,                       /* FC_PAD */
              0x5b,                       /* FC_END */
/* 674 */

              0x11, 0x0,    /* FC_RP */
/* 676 */     NdrFcShort( 0xff ffffd4 ),  /* Offset= -44 (632) */
/* 678 */

              0x1d,                       /*
FC_SMFARRAY */

              0x0,                        /* 0 */
/* 680 */     NdrFcShort( 0x8 ),          /* 8 */
/* 682 */     0x1,                        /* FC_BYTE */
              0x5b,                       /* FC_END */
/* 684 */

              0x15,                       /* FC_STRUCT
*/
              0x3,                        /* 3 */
/* 686 */     NdrFcShort( 0x10 ),         /* 16 */
/* 688 */     0x8,                        /* FC_LONG */
              0x6,                        /* FC_SHORT
*/
/* 690 */     0x6,                        /* FC_SHORT */
```

```
                                0x4c,                   /*
FC_EMBEDDED_COMPLEX */
/* 692 */      0x0,                    /* 0 */
                                NdrFcShort( 0xfffffff1 ),   /* Offset= -
15 (678) */
                                0x5b,                   /* FC_END */

/* 696 */
                                0x1a,                   /*
FC_BOGUS_STRUCT */
                                0x3,                    /* 3 */

/* 698 */      NdrFcShort( 0x18 ),     /* 24 */
/* 700 */      NdrFcShort( 0x0 ),      /* 0 */
/* 702 */      NdrFcShort( 0xa ),      /* Offset= 10 (712) */
/* 704 */      0x8,                    /* FC_LONG */
                                0x36,                   /* FC_POINTER
*/
/* 706 */      0x4c,                   /* FC_EMBEDD ED_COMPLEX */
                                0x0,                    /* 0 */
/* 708 */      NdrFcShort( 0xffffffe8 ),   /* Offset= -24 (684) */
/* 710 */      0x5c,                   /* FC_PAD */
                                0x5b,                   /* FC_END */

/* 712 */
                                0x11, 0x0,      /* FC_RP */
/* 714 */      NdrFcShort( 0xfffffff0c ),  /* Offset= -244 (470) */
/* 716 */
                                0x1b,                   /* FC_CARRAY
*/
                                0x0,                    /* 0 */
/* 718 */      NdrFcShort( 0x1 ),      /* 1 */
/* 720 */      0x19,                   /* Corr desc:  field pointer, FC_ULONG
*/
                                0x0,                    /*  */
/* 722 */      NdrFcShort( 0x0 ),      /* 0 */
/* 724 */      0x1,                    /* FC_BYTE */
                                0x5b,                   /* FC_END */

/* 726 */
                                0x16,                   /* FC_PSTRUCT
*/
                                0x3,                    /* 3 */
/* 728 */      NdrFcShort( 0x8 ),      /* 8 */
/* 730 */
                                0x4b,                   /* FC_PP */
                                0x5c,                   /* FC_PAD */

/* 732 */
                                0x46,                   /*
FC_NO_REPEAT */
                                0x5c,                   /* FC_PAD */
/* 734 */      NdrFcShort( 0x4 ),      /* 4 */
/* 736 */      NdrFcShort( 0x4 ),      /* 4 */
/* 738 */      0x12, 0x0,      /* FC_UP */
/* 740 */      NdrFcShort( 0xfffffff8 ),   /* Offset= -24 (716) */
/* 742 */
                                0x5b,                   /* FC_END */

                                0x8,                    /* FC_LONG */
/* 744 */      0x8,                    /* FC_LONG */
                                0x5b,                   /* FC_END */
/* 746 */
                                0x1b,                   /* FC_CARRAY
*/
                                0x1,                    /* 1 */
/* 748 */      NdrFcShort( 0x2 ),      /* 2 */
/* 750 */      0x19,                   /* Corr desc:  field pointer, FC_ULONG
*/
                                0x0,                    /*  */
/* 752 */      NdrFcShort( 0x0 ),      /* 0 */
/* 754 */      0x6,                    /* FC_SHORT */
                                0x5b,                   /* FC_END */
/* 756 */
                                0x16,                   /* FC_PSTRUCT
*/
                                0x3,                    /* 3 */
/* 758 */      NdrFcShort( 0x8 ),      /* 8 */
/* 760 */
                                0x4b,                   /* FC_PP */
                                0x5c,                   /* FC_PAD */

/* 762 */
                                0x46,                   /*
FC_NO_REPEAT */
                                0x5c,                   /* FC_PAD */
/* 764 */      NdrFcShort( 0x4 ),      /* 4 */
/* 766 */      NdrFcShort( 0x4 ),      /* 4 */
/* 768 */      0x12, 0x0,      /* FC_UP */
/* 770 */      NdrFcShort( 0xfffffff8 ),   /* Offset= -24 (746) */
/* 772 */
                                0x5b,                   /* FC_END */

                                0x8,                    /* FC_LONG */
/* 774 */      0x8,                    /* FC_LONG */
                                0x5b,                   /* FC_END */
/* 776 */
                                0x1b,                   /* FC_CARRAY
*/
                                0x3,                    /* 3 */
/* 778 */      NdrFcShort( 0x4 ),      /* 4 */
/* 780 */      0x19,                   /* Corr desc:  field pointer, FC_ULONG
*/
                                0x0,                    /*  */
/* 782 */      NdrFcShort( 0x0 ),      /* 0 */
/* 784 */      0x8,                    /* FC_LONG */
                                0x5b,                   /* FC_END */

/* 786 */
                                0x16,                   /* FC_PSTRUCT
*/
                                0x3,                    /* 3 */
/* 788 */      NdrFcShort( 0x8 ),      /* 8 */
/* 790 */
                                0x4b,                   /* FC_PP */
                                0x5c,                   /* FC_PAD */

/* 792 */
                                0x46,                   /*
FC_NO_REPEAT */
                                0x5c,                   /* FC_PAD */
/* 794 */      NdrFcShort( 0x4 ),      /* 4 */
/* 796 */      NdrFcShort( 0x4 ),      /* 4 */
/* 798 */      0x12, 0x0,      /* FC_UP */
/* 800 */      NdrFcShort( 0xfffffff8 ),   /* Offset= -24 (776) */
/* 802 */
                                0x5b,                   /* FC_END */

                                0x8,                    /* FC_LONG */
/* 804 */      0x8,                    /* FC_LONG */
                                0x5b,                   /* FC_END */
/* 806 */
                                0x1b,                   /* FC_CARRAY
*/
                                0x7,                    /* 7 */
/* 808 */      NdrFcShort( 0x8 ),      /* 8 */
/* 810 */      0x19,                   /* Corr desc:  field pointer, FC_ULONG
*/
                                0x0,                    /*  */
/* 812 */      NdrFcShort( 0x0 ),      /* 0 */
/* 814 */      0xb,                    /* FC_HYPER */
                                0x5b,                   /* FC_END */

/* 816 */
                                0x16,                   /* FC_PSTRUCT
*/
                                0x3,                    /* 3 */
/* 818 */      NdrFcShort( 0x8 ),      /* 8 */
/* 820 */
                                0x4b,                   /* FC_PP */
                                0x5c,                   /* FC_PAD */

/* 822 */
                                0x46,                   /*
FC_NO_REPEAT */
                                0x5c,                   /* FC_PAD */
/* 824 */      NdrFcShort( 0x4 ),      /* 4 */
/* 826 */      NdrFcShort( 0x4 ),      /* 4 */
/* 828 */      0x12, 0x0,      /* FC_UP */
/* 830 */      NdrFcShort( 0xfffffff8 ),   /* Offset= -24 (806) */
/* 832 */
                                0x5b,                   /* FC_END */

                                0x8,                    /* FC_LONG */
/* 834 */      0x8,                    /* FC_LONG */
                                0x5b,                   /* FC_END */
/* 836 */
                                0x15,                   /* FC_STRUCT
*/
                                0x3,                    /* 3 */
/* 838 */      NdrFcShort( 0x8 ),      /* 8 */
/* 840 */      0x8,                    /* FC_LONG */
                                0x8,                    /* FC_LONG */
/* 842 */      0x5c,                   /* FC_PAD */
                                0x5b,                   /* FC_END */
/* 844 */
                                0x1b,                   /* FC_CARRAY
*/
                                0x3,                    /* 3 */
/* 846 */      NdrFcShort( 0x8 ),      /* 8 */
/* 848 */      0x7,                    /* Corr desc: FC_USHORT */
                                0x0,                    /*  */
/* 850 */      NdrFcShort( 0xffd8 ),   /* -40 */
/* 852 */      0x4c,                   /* FC_EMBEDDED_COMPLEX */
                                0x0,                    /* 0 */
/* 854 */      NdrFcShort( 0xffffffee ),   /* Offset= -18 (836) */
/* 856 */      0x5c,                   /* FC_PAD */
                                0x5b,                   /* FC_END */

/* 858 */
                                0x1a,                   /*
FC_BOGUS_STRUCT */
                                0x3,                    /* 3 */
/* 860 */      NdrFcShort( 0x28 ),     /* 40 */
/* 862 */      NdrFcShort( 0xfffffffee ),  /* Offset= -18 (844) */
/* 864 */      NdrFcShort( 0x0 ),      /* Offset= 0 (864) */
/* 866 */      0x6,                    /* FC_SHORT */
                                0x6,                    /* FC_SHORT
*/
/* 868 */      0x38,                   /* FC_ALIGNM4 */
                                0x8,                    /* FC_LONG */
/* 870 */      0x8,                    /* FC_LONG */
                                0x4c,                   /*
FC_EMBEDDED_COMPLEX */
/* 872 */      0x0,                    /* 0 */
                                NdrFcShort( 0xffffffdf7 ),   /* Offset= -
521 (352) */
                                0x5b,                   /* FC_END */

/* 876 */
                                0x12, 0x0,      /* FC_UP */
/* 878 */      NdrFcShort( 0xffffffef6 ),  /* Offset= -266 (612) */
/* 880 */
                                0x12, 0x8,      /* FC_UP [simple_pointer]
*/
/* 882 */      0x1,                    /* FC_BYTE */
                                0x5c,                   /* FC_PAD */

/* 884 */
                                0x12, 0x8,      /* FC_UP [simple_pointer]
*/
/* 886 */      0x6,                    /* FC_SHORT */
                                0x5c,                   /* FC_PAD */

/* 888 */
                                0x12, 0x8,      /* FC_UP [simple_pointer]
*/
/* 890 */      0x8,                    /* FC_LONG */
                                0x5c,                   /* FC_PAD */

/* 892 */
                                0x12, 0x8,      /* FC_UP [simple_pointer]
*/
/* 894 */      0xa,                    /* FC_FLOAT */
                                0x5c,                   /* FC_PAD */

/* 896 */
                                0x12, 0x8,      /* FC_UP [simple_pointer]
*/
/* 898 */      0xc,                    /* FC_DOUBLE */
                                0x5c,                   /* FC_PAD */

/* 900 */
                                0x12, 0x0,      /* FC_UP */
/* 902 */      NdrFcShort( 0xfffffd90 ),   /* Offset= -624 (278) */
/* 904 */
                                0x12, 0x10,     /* FC_UP [pointer_deref] */
/* 906 */      NdrFcShort( 0xfffffd92 ),   /* Offset= -622 (284) */
/* 908 */
                                0x12, 0x10,     /* FC_UP [pointer_deref] */
/* 910 */      NdrFcShort( 0xfffffda6 ),   /* Offset= -602 (308) */
/* 912 */
                                0x12, 0x10,     /* FC_UP [pointer_deref] */
/* 914 */      NdrFcShort( 0xfffffdb4 ),   /* Offset= -588 (326) */
/* 916 */
                                0x12, 0x10,     /* FC_UP [pointer_deref] */
/* 918 */      NdrFcShort( 0xfffffdc2 ),   /* Offset= -574 (344) */
/* 920 */
                                0x12, 0x10,     /* FC_UP [pointer_deref] */
/* 922 */      NdrFcShort( 0x2 ),      /* Offset= 2 (924) */
/* 924 */
                                0x12, 0x0,      /* FC_UP */
/* 926 */      NdrFcShort( 0x16 ),     /* Offset= 22 (948) */
/* 928 */
                                0x15,                   /* FC_STRUCT
*/
                                0x7,                    /* 7 */
/* 930 */      NdrFcShort( 0x10 ),     /* 16 */
/* 932 */      0x6,                    /* FC_SHORT */
                                0x1,                    /* FC_BYTE */
/* 934 */      0x1,                    /* FC_BYTE */
                                0x38,                   /* FC_ALIGNM4
*/
/* 936 */      0x8,                    /* FC_LONG */
                                0x39,                   /* FC_ALIGNM8
*/
/* 938 */      0xb,                    /* FC_HYPER */
                                0x5b,                   /* FC_END */

/* 940 */
                                0x12, 0x0,      /* FC_UP */
/* 942 */      NdrFcShort( 0xfffffff2 ),   /* Offset= -14 (928) */
/* 944 */
                                0x12, 0x8,      /* FC_UP [simple_pointer]
*/
/* 946 */      0x2,                    /* FC_CHAR */
                                0x5c,                   /* FC_PAD */

/* 948 */
                                0x1a,                   /*
FC_BOGUS_STRUCT */
                                0x7,                    /* 7 */
/* 950 */      NdrFcShort( 0x20 ),     /* 32 */
/* 952 */      NdrFcShort( 0x0 ),      /* 0 */
/* 954 */      NdrFcShort( 0x0 ),      /* Offset= 0 (954) */
/* 956 */      0x8,                    /* FC_LONG */
                                0x8,                    /* FC_LONG */
/* 958 */      0x6,                    /* FC_SHORT */
                                0x6,                    /* FC_SHORT
*/
/* 960 */      0x6,                    /* FC_SHORT */
                                0x6,                    /* FC_SHORT
*/
/* 962 */      0x4c,                   /* FC_EMBEDDED_COMPLEX */
                                0x0,                    /* 0 */
/* 964 */      NdrFcShort( 0xfffffc42 ),   /* Offset= -958 (6) */
/* 966 */      0x5c,                   /* FC_PAD */
                                0x5b,                   /* FC_END */
/* 968 */      0xb4,                   /* FC_USER_MARSHAL */
                                0x83,                   /* 131 */
/* 970 */      NdrFcShort( 0x0 ),      /* 0 */
/* 972 */      NdrFcShort( 0x10 ),     /* 16 */
/* 974 */      NdrFcShort( 0x0 ),      /* 0 */
/* 976 */      NdrFcShort( 0xfffffc32 ) ,  /* Offset= -974 (2) */
/* 978 */
                                0x11, 0x4,      /* FC_RP [alloced_on_stack]
*/
/* 980 */      NdrFcShort( 0x6 ),      /* Offset= 6 (986) */
/* 982 */
                                0x13, 0x0,      /* FC_OP */
/* 984 */      NdrFcShort( 0xfffffffdc ),  /* Offset= -36 (948) */
/* 986 */      0xb4,                   /* FC_USER_MARSHAL */
                                0x83,                   /* 131 */
/* 988 */      NdrFcShort( 0x0 ),      /* 0 */
/* 990 */      NdrFcShort( 0x10 ),     /* 16 */
/* 992 */      NdrFcShort( 0x0 ),      /* 0 */
/* 994 */      NdrFcShort( 0xfffffff4 ),   /* Offset= -12 (982) */

                                0x0
        }
    };

const CInterfaceProxyVtbl  * _tpcc_com_ps_ProxyVtblList[] =
{
    ( CInterfaceProxyVtbl *) &_ITPCCProxyVtbl,
    0
};

const CInterfaceStubVtbl * _tpcc_com_ps_StubVtblList[] =
{
    ( CInterfaceStubVtbl *) &_ITPCCStubVtbl,
    0
};

PCInterfaceName const _tpcc_com_ps_InterfaceNam  esList[] =
{
    "ITPCC",
    0
};
```

```
#define _tpcc_com_ps_CHECK_IID(n)          IID_GENERIC_CHECK_IID( _tpcc_com_ps,
pIID, n)

int __stdcall _tpcc_com_ps_IID_Lookup( const IID * pIID, int * pIndex )
{

    if(!_tpcc_com_ps_CHECK_IID(0))
        {
        *pIndex = 0;
        return 1;
        }

    return 0;
}

const ExtendedProxyFileInfo tpcc_com_ps_ProxyFileInfo =
{
    (PCInterfaceProxyVtblList *) & _tpcc_com_ps_ProxyVtblList,
    (PCInterfaceStubVtblList *) & _tpcc_com_ps_StubVtblList,
    (const PCInterfaceName * ) & _tpcc_com_ps_InterfaceNamesList,
    0, // no delegation
    & _tpcc_com_ps_IID_Lookup,
    1,
    2,
    0, /* table of [async_uuid] interfaces */
    0, /* Filler1 */
    0, /* Filler2 */
    0  /* Filler3 */
};


#endif /* !defined(_M_IA6 4) && !defined(_M_AXP64)*/


#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the proxy stub code */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for . \src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext,
robust
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if defined(_M_IA64) || defined(_M_AXP64)
#define USE_STUBLESS_PROXY


/* verify that the <rpcproxy.h> version is high enough to compile t   his file*/
#ifndef __REDQ_RPCPROXY_H_VERSION__
#define __REQUIRED_RPCPROXY_H_VERSION__ 475
#endif


#include "rpcproxy.h"
#ifndef __RPCPROXY_H_VERSION__
#error this stub requires an updated version of <rpcproxy.h>
#endif // __RPCPROXY_H_VERSION__


#include "tpcc_com_ps.h"

#define TYPE_FORMAT_STRING_SIZE   979
#define PROC_FORMAT_STRING_SIZE   253
#define TRANSMIT_AS_TABLE_SIZE    0
#define WIRE_MARSHAL_TABLE_SIZE   1

typedef struct _MIDL_TYPE_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ TYPE_FORMAT_STRING_SIZE ];
    } MIDL_TYPE_FORMAT_STRING;

typedef struct _MIDL_PROC_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ PROC_  FORMAT_STRING_SIZE ];
    } MIDL_PROC_FORMAT_STRING;


extern const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;


/* Standard interface: __MIDL_itf_tpcc_com_ps_0000, ver. 0.0,
   GUID={0x00 000000,0x0000,0x0000,{0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00}} */


/* Object interface: IUnknown, ver. 0.0,
   GUID={0x00000000,0x0000,0x0000,{0xC0,0x00,0x00,0x00,0x00,0x00,0x00,0x46}} */


/* Object interface: ITPCC, ver. 0.0,
   GUID={0xFEEE6AA2,0x84B1 ,0x11d2,{0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B}} */


extern const MIDL_STUB_DESC Object_StubDesc;


extern const MIDL_SERVER_INFO ITPCC_ServerInfo;

#pragma code_seg(".orpc")
static const unsigned short ITPCC_FormatStringOffsetTable[] =
    {
    0,
    44,
    88,
    132,
    176,
    220
    };

static const MIDL_SERVER_INFO ITPCC_ServerInfo =
    {
    &Object_StubDesc,
    0,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[ -3],
    0,
    0,
    0,
    0
    };

static const  MIDL_STUBLESS_PROXY_INFO ITPCC_ProxyInfo =
    {
    &Object_StubDesc,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[ -3],
    0,
    0,
    0
    };

CINTERFACE_PROXY_VTABLE(9) _ITPCCProxyVtbl =
{
    &ITPCC_ProxyInfo,
    &IID_ITPCC,
    IUnknown_QueryInterface_Proxy,
    IUnknown_AddRef_Proxy,
    IUnknown_Release_Proxy ,
    (void *) -1 /* ITPCC::NewOrder */ ,
    (void *) -1 /* ITPCC::Payment */ ,
    (void *) -1 /* ITPCC::Delivery */ ,
    (void *) -1 /* ITPCC::StockLevel */ ,
    (void *) -1 /* ITPCC::OrderStatus */ ,
    (void *) -1 /* ITPCC::CallSetComplete */
};

const CInterfaceStubVtbl _ITPCCStubVtbl =
{
    &IID_ITPCC,
    &ITPCC_ServerInfo,
    9,
    0, /* pure interpreted */
    CStdStubBuffer_METHODS
};

extern const USER_MARSHAL_ROUTINE_QUADRUPLE
UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ];

static const MIDL_STUB_DESC Object_StubDesc =
    {
    0,
    NdrOleAllocate,
    NdrOleFree,
    0,
    0,
    0,
    0,
    0,
    __MIDL_TypeFormatString.Format,
    1, /* -error bounds_check flag */
    0x50002, /* Ndr library version */
    0,
    0x5030118, /* MIDL Version 5.3.280 */
    0,
    UserMarshalRoutines,
    0,  /* notify & notify_flag routine table */
    0x1, /* MIDL flag */
    0,  /* Reserved3 */
    0,  /* Reserved4 */
    0   /* Reserved5 */
    };

#pragma data_seg(".rdata")

static const USER_MARSHAL_ROUTINE_QUADRUPLE
UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ] =
        {

            {
            VARIANT_UserSize
            ,VARIANT_User Marshal
            ,VARIANT_UserUnmarshal
            ,VARIANT_UserFree
            }

        };


#if !defined(__RPC_WIN64__)
#error  Invalid build platform for this stub.
#endif

static const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString =
    {
        0,
        {

            /* Procedure NewOrder */

                                                0x33,                   /*
FC_AUTO_HANDLE */
                                                0x6c,                   /* Old Flags:
object, Oi2 */
/*  2 */        NdrFcLong( 0x0 ),               /* 0 */
/*  6 */        NdrFcShort( 0x3 ),              /* 3 */
#ifndef _ALPHA_
/*  8 */        NdrFcShort( 0x38 ),             /* ia64 Stack size/offse t = 56 */
#else
                                                NdrFcShort( 0x30 ),     /* axp64
Stack size/offset = 48 */
#endif
/* 10 */        NdrFcShort( 0x0 ),              /* 0 */
/* 12 */        NdrFcShort( 0x8 ),              /* 8 */
/* 14 */        0x47,                           /* Oi2 Flags:  srv must size, clt must
size, has return, has ext, */
                                                0x3,                    /* 3 */
/* 16 */        0xa,                            /* 10 */
                                                0x7,                    /* Ext Flags:
new corr desc, clt corr check, srv corr check, */
/* 18 */        NdrFcShort( 0x20 ),             /* 32 */
/* 20 */        NdrFcShort( 0x20 ),             /* 32 */
/* 22 */        NdrFcShort( 0x0 ),              /* 0 */
/* 24 */        NdrFcShort( 0x0 ),              /* 0 */

            /* Parame ter txn_in */

/* 26 */        NdrFcShort( 0x8b ),             /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
/* 28 */        NdrFcShort( 0x10 ),             /* ia64 Stack size/offset = 16 */
#else
                                                NdrFcShort( 0x8 ),      /* axp64
Stack size/offset = 8 */
#endif
/* 30 */        NdrFcShort( 0x3b6 ),            /* Type Offset=950 */

            /* Parameter txn_out */

/* 32 */        NdrFcShort( 0x6113 ),           /* Flags:  must size, must free, out,
simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 34 */        NdrFcShort( 0x28 ),             /* ia64 Stack size/offset = 40 */
#else
                                                NdrFcShort( 0x20 ),     /* axp64
Stack size/offset = 32 */
#endif
/* 36 */        NdrFcShort( 0x3c8 ),            /* Type Offset=968 */

            /* Return value */

/* 38 */        NdrFcShort( 0x70 ),             /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 40 */        NdrFcShort( 0x30 ),             /* ia64 Stack size/offset = 48 */
#else
                                                NdrFcShort( 0x28 ),     /* axp64
Stack size/offset = 40 */
#endif
/* 42 */        0x8,                            /* FC_LONG */
                                                0x0,                    /* 0 */

            /* Procedure Payment */

/* 44 */        0x33,                           /* FC_AUTO_HANDLE */
                                                0x6c,                   /* Old Flags:
object, Oi2 */
/* 46 */        NdrFcLong( 0x0 ),               /* 0 */
/* 50 */        NdrFcShort( 0x4 ),              /* 4 */
#ifndef _ALPHA_
/* 52 */        NdrFcShort( 0x38 ),             /* ia64 Stack size/offset = 56 */
#else
                                                NdrFcShort( 0x30 ),     /* axp64
Stack size/offset = 48 */
#endif
/* 54 */        NdrFcShort( 0x0 ),              /* 0 */
/* 56 */        NdrFcShort( 0x8 ),              /* 8 */
/* 58 */        0x47,                           /* Oi2 Flags:  srv must size, clt must
size, has return, has ext, */
                                                0x3,                    /* 3 */
/* 60 */        0xa,                            /* 10 */
                                                0x7,                    /* Ext Flags:
new corr desc, clt corr check, srv corr check, */
/* 62 */        NdrFcShort( 0x20 ),             /* 32 */
/* 64 */        NdrFcShort( 0x20 ),             /* 32 */
/* 66 */        NdrFcShort( 0x0 ),              /* 0 */
/* 68 */        NdrFcShort( 0x0 ),              /* 0 */

            /* Parameter txn_in */

/* 70 */        NdrFcShort( 0x8b ),             /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
/* 72 */        NdrFcShort(  0x10 ),            /* ia64 Stack size/offset = 16 */
#else
                                                NdrFcShort( 0x8 ),      /* axp64
Stack size/offset = 8 */
#endif
/* 74 */        NdrFcShort( 0x3b6 ),            /* Type Offset=950 */

            /* Parameter txn_out */

/* 76 */        NdrFcShort( 0x6113 ),           /* Flags:  must size, must free, o ut,
simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 78 */        NdrFcShort( 0x28 ),             /* ia64 Stack size/offset = 40 */
#else
                                                NdrFcShort( 0x20 ),     /* axp64
Stack size/offset = 32 */
```

```
#endif
/* 80 */      NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

                /* Return value  */

/* 82 */      NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 84 */      NdrFcShort( 0x30 ),         /* ia64 Stack size/offset = 48 */
#else
                                          NdrFcShort( 0x28 ),         /* axp64
Stack size/offset = 40 */
#endif
/* 86 */      0x8,                        /* FC_LONG */
                                          0x0,                        /* 0 */

                /* Procedure Delivery */

/* 88 */      0x33,                       /* FC_AUTO_HANDLE */
                                          0x6c,                       /* Old Flags:
object, Oi2 */
/* 90 */      NdrFcLong( 0x0 ),           /* 0 */
/* 94 */      NdrFcShort( 0x5 ),          /* 5 */
#ifndef _ALPHA_
/* 96 */      NdrFcShort( 0x38 ),         /* ia64 Stack size/offs et = 56 */
#else
                                          NdrFcShort( 0x30 ),         /* axp64
Stack size/offset = 48 */
#endif
/* 98 */      NdrFcShort( 0x0 ),          /* 0 */
/* 100 */     NdrFcShort( 0x8 ),          /* 8 */
/* 102 */     0x47,                       /* Oi2 Flags:  srv must size, clt must
size, has return, has ext, */
                                          0x3,                        /* 3 */
/* 104 */     0xa,                        /* 10 */
                                          0x7,                        /* Ext Flags:
new corr desc, clt corr check, srv corr check, */
/* 106 */     NdrFcShort( 0x20 ),         /* 32 */
/* 108 */     NdrFcShort( 0x20 ),         /* 32 */
/* 110 */     NdrFcShort( 0x0 ),          /* 0 */
/* 112 */     NdrFcShort( 0x0 ),          /* 0 */

                /* Parameter txn_in */

/* 114 */     NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
/* 116 */     NdrFcShort( 0x10 ),         /* ia64 Stack size/offset = 16 */
#else
                                          NdrFcShort( 0x8 ),          /* axp64
Stack size/offset = 8 */
#endif
/* 118 */     NdrFcShort( 0x3b6 ),        /* Type Offset=950 */

                /* Parameter txn_out */

/* 120 */     NdrFcShort( 0x6113 ),       /* Flags:  must size, must free, out,
simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 122 */     NdrFcShort( 0x28 ),         /* ia64 Stack size/offset = 40 */
#else
                                          NdrFcShort( 0x20 ),         /* axp64
Stack size/offset = 32 */
#endif
/* 124 */     NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

                /* Return value */

/* 126 */     NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 128 */     NdrFcShort( 0x3 0 ),        /* ia64 Stack size/offset = 48 */
#else
                                          NdrFcShort( 0x28 ),         /* axp64
Stack size/offset = 40 */
#endif
/* 130 */     0x8,                        /* FC_LONG */
                                          0x0,                        /* 0 */

                /* Procedure StockLevel */

/* 132 */     0x33,                       /* FC_AUTO_HANDLE */
                                          0x6c,                       /* Old Flags:
object, Oi2 */
/* 134 */     NdrFcLong( 0x0 ),           /* 0 */
/* 138 */     NdrFcShort( 0x6 ),          /* 6 */
#ifndef _ALPHA_
/* 140 */     NdrFcShort( 0x38 ),         /* ia64 Stack size/offset = 56 */
#else
                                          NdrFcShort( 0x30 ),         /* axp64
Stack size/offset = 48 */
#endif
/* 142 */     NdrFcShort( 0 x0 ),         /* 0 */
/* 144 */     NdrFcShort( 0x8 ),          /* 8 */
/* 146 */     0x47,                       /* Oi2 Flags:  srv must size, clt must
size, has return, has ext, */
                                          0x3,                        /* 3 */
/* 148 */     0xa,                        /* 10 */
                                          0x7,                        /* Ext Flags:
new corr desc, clt corr check, srv corr check, */
/* 150 */     NdrFcShort( 0x20 ),         /* 32 */
/* 152 */     NdrFcShort( 0x20 ),         /* 32 */
/* 154 */     NdrFcShort( 0x0 ),          /* 0 */
/* 156 */     NdrFcShort( 0x0 ),          /* 0 */

                /* Parameter txn_in */

/* 158 */     NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
/* 160 */     NdrFcShort( 0x10 ),         /* ia64 Stack size/offset = 16 */
#else
                                          NdrFcShort( 0x8 ),          /* axp64
Stack size/offset = 8 */
#endif
/* 162 */     NdrFcShort( 0x3b6 ),        /* Type Offset=950 */

                /* Parameter txn_out */

/* 164 */     NdrFcShort( 0x6113 ) ,      /* Flags:  must size, must free, out,
simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 166 */     NdrFcShort( 0x28 ),         /* ia64 Stack size/offset = 40 */
#else
                                          NdrFcShort( 0x20 ),         /* axp64
Stack size/offset = 32 */
#endif
/* 168 */     NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

                /* Return value */

/* 170 */     NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 172 */     NdrFcShort( 0x30 ),         /* ia64 Stack size/offset = 48 */
#else
                                          NdrFcShort( 0x28 ),         /* axp64
Stack size/offset = 40 */
#endif
/* 174 */     0x8,                        /* FC_LONG */
                                          0x0,                        /* 0 */

                /* Procedure OrderStatus */

/* 176 */     0x33,                       /* FC_AUTO_HANDLE */
                                          0x6c,                       /* Old Flags:
object, Oi2 */
/* 178 */     NdrFcLong( 0x0 ),           /* 0 */
/* 182 */     NdrFcShort( 0x7 ),          /* 7 */
#ifndef _ALPHA_
/* 184 */     NdrFcShort( 0x38 ),         /* ia64 Stack size/offset = 56 */
#else
                                          NdrFcShort( 0x30 ),         /* axp64
Stack size/offset = 48 */
#endif
/* 186 */     NdrFcShort( 0x0 ),          /* 0 */
/* 188 */     NdrFcShort( 0x8 ),          /* 8 */
/* 190 */     0x47,                       /* Oi2 Flags:  srv must size, clt m ust
size, has return, has ext, */
                                          0x3,                        /* 3 */
/* 192 */     0xa,                        /* 10 */
                                          0x7,                        /* Ext Flags:
new corr desc, clt corr check, srv corr check, */
/* 194 */     NdrFcShort( 0x20 ),         /* 32 */
/* 196 */     NdrFcShort( 0x20 ),         /* 32 */
/* 198 */     NdrFcShort( 0x0 ),          /* 0 */
/* 200 */     NdrFcShort( 0x0 ),          /* 0 */

                /* Parameter txn_in */

/* 202 */     NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
/* 204 */     NdrFcShort( 0x10 ),         /* ia64 Stack size/offset = 16 */
#else
                                          NdrFcShort( 0x8 ) ,         /* axp64
Stack size/offset = 8 */
#endif
/* 206 */     NdrFcShort( 0x3b6 ),        /* Type Offset=950 */

                /* Parameter txn_out */

/* 208 */     NdrFcShort( 0x6113 ),       /* Flags:  must size, must free, out,
simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 210 */     NdrFcShort( 0x28 ),         /* ia64 Stack size/offset = 40 */
#else
                                          NdrFcShort( 0x20 ),         /* axp64
Stack size/offset = 32 */
#endif
/* 212 */     NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

                /* Return value */

/* 214 */     NdrFcShort( 0x70 ),         /* Flags:  out, return, base t ype, */
#ifndef _ALPHA_
/* 216 */     NdrFcShort( 0x30 ),         /* ia64 Stack size/offset = 48 */
#else
                                          NdrFcShort( 0x28 ),         /* axp64
Stack size/offset = 40 */
#endif
/* 218 */     0x8,                        /* FC_LONG */
                                          0x0,                        /* 0 */

                /* Procedure CallSetComplete */

/* 220 */     0x33,                       /* FC_AUTO_HANDLE */
                                          0x6c,                       /* Old Flags:
object, Oi2 */
/* 222 */     NdrFcLong( 0x0 ),           /* 0 */
/* 226 */     NdrFcShort( 0x8 ),          /* 8 */
/* 228 */     NdrFcShort( 0x10 ),         /* ia64, axp64 Stack size/offset = 16 */
/* 230 */     NdrFcShort( 0x0 ),          /* 0 */
/* 232 */     NdrFcShort( 0x8 ),          /* 8 */
/* 234 */     0x44,                       /* Oi2 Flags:  has return, has ext, */
                                          0x1,                        /* 1 */
/* 236 */     0xa,                        /* 10 */
                                          0x1,                        /* Ext Flags:
new corr desc, */
/* 238 */     NdrFcShort( 0x0 ),          /* 0 */
/* 240 */     NdrFcShort( 0x0 ),          /* 0 */
/* 242 */     NdrFcShort( 0x0 ),          /* 0 */
/* 244 */     NdrFcShort( 0x0 ),          /* 0 */

                /* Return value */

/* 246 */     NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
/* 248 */     NdrFcShort( 0x8 ),          /* ia64, axp64 Stack size/offset = 8 */
/* 250 */     0x8,                        /* FC_LONG */
                                          0x0,                        /* 0 */

                                          0x0
    }
  };

static const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString =
  {
    0,
    {
                                          NdrFcShort( 0x0 ),          /* 0 */
/*  2 */
                                          0x12, 0x0,    /* FC_UP */
/*  4 */      NdrFcShort( 0x39e ),        /* Offset= 926 (930) */
/*  6 */
                                          0x2b,                       /*
FC_NON_ENCAPSULATED_UNION */
                                          0x9,                        /* FC_ULONG
*/
/*  8 */      0x7,                        /* Corr desc: FC_USHORT */
                                          0x0,                        /*  */
/* 10 */      NdrFcShort( 0xfff8 ),       /* -8 */
/* 12 */      NdrFcShort( 0x1 ),          /* Corr flags:  early, */
/* 14 */      NdrFcShort( 0x2 ),          /* Offset= 2 (16) */
/* 16 */      NdrFcShort( 0x10 ),         /* 16 */
/* 18 */      NdrFcShort( 0x2b ),         /* 43 */
/* 20 */      NdrFcLong( 0x3 ),           /* 3 */
/* 24 */      NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 26 */      NdrFcLong( 0x11 ),          /* 17 */
/* 30 */      NdrFcShort( 0x8001 ),       /* Simple arm type: FC_BYTE */
/* 32 */      NdrFcLong( 0x2 ),           /* 2 */
/* 36 */      NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 38 */      NdrFcLong( 0x4 ),           /* 4 */
/* 42 */      NdrFcShort( 0x800a ),       /* Simple arm type: FC_FLOAT */
/* 44 */      NdrFcLong( 0x5 ),           /* 5 */
/* 48 */      NdrFcShort( 0x800c ),       /* Simple arm type: FC_DOUBLE */
/* 50 */      NdrFcLong( 0xb ),           /* 11 */
/* 54 */      NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 56 */      NdrFcLong( 0xa ),           /* 10 */
/* 60 */      NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG  */
/* 62 */      NdrFcLong( 0x6 ),           /* 6 */
/* 66 */      NdrFcShort( 0xd6 ),         /* Offset= 214 (280) */
/* 68 */      NdrFcLong( 0x7 ),           /* 7 */
/* 72 */      NdrFcShort( 0x800c ),       /* Simple arm type: FC_DOUBLE */
/* 74 */      NdrFcLong( 0x8 ),           /* 8 */
/* 78 */      NdrFcShort( 0xd0 ),         /* Offset= 208 (286) */
/* 80 */      NdrFcLong( 0xd ),           /* 13 */
/* 84 */      NdrFcShort( 0xe4 ),         /* Offset= 228 (312) */
/* 86 */      NdrFcLong( 0x9 ),           /* 9 */
/* 90 */      NdrFcShort( 0xf0 ),         /* Offset= 240 (330) */
/* 92 */      NdrFcLong( 0x2000 ),        /* 8192 */
/* 96 */      NdrFcShort( 0xfc ),         /* Offset= 252 (348) */
/* 98 */      NdrFcLong( 0x24 ),          /* 36 */
/* 102 */     NdrFcShort( 0x214 ),        /* Offset= 756 (858) */
/* 104 */     NdrFcLong( 0x4024 ),        /* 16420 */
/* 108 */     NdrFcShort( 0x2ee ),        /* Offset= 750 (858) */
/* 110 */     NdrFcLong( 0x4011  ),       /* 16401 */
/* 114 */     NdrFcShort( 0x2ec ),        /* Offset= 748 (862) */
/* 116 */     NdrFcLong( 0x4002 ),        /* 16386 */
/* 120 */     NdrFcShort( 0x2ea ),        /* Offset= 746 (866) */
/* 122 */     NdrFcLong( 0x4003 ),        /* 16387 */
/* 126 */     NdrFcShort( 0x2e8 ),        /* Offset= 744  (870) */
/* 128 */     NdrFcLong( 0x4004 ),        /* 16388 */
/* 132 */     NdrFcShort( 0x2e6 ),        /* Offset= 742 (874) */
/* 134 */     NdrFcLong( 0x4005 ),        /* 16389 */
/* 138 */     NdrFcShort( 0x2e4 ),        /* Offset= 740 (878) */
/* 140 */     NdrFcLong( 0x400b ),        /* 16395 */
/* 144 */     NdrFcShort( 0x2d2 ),        /* Offset= 722 (866) */
/* 146 */     NdrFcLong( 0x400a ),        /* 16394 */
/* 150 */     NdrFcShort( 0x2d0 ),        /* Offset= 720 (870) */
/* 152 */     NdrFcLong( 0x4006 ),        /* 16390 */
/* 156 */     NdrFcShort( 0x2d6 ),        /* Offset= 726 (882) */
/* 158 */     NdrFcLong( 0x4007 ),        /* 16391 */
/* 162 */     NdrFcShort( 0x2cc ),        /* Offset= 716 (878) */
/* 164 */     NdrFcLong( 0x4008 ),        /* 16392 */
/* 168 */     NdrFcShort( 0x2ce ),        /* Offset= 718 (886) */
/* 170 */     NdrFcLong( 0x400d ),        /* 16397 */
/* 174 */     NdrFcShort( 0x2cc ),        /* Offset= 716 (890) */
/* 176 */     NdrFcLong( 0x4009 ),        /* 16393 */
/* 180 */     NdrFcShort( 0x2ca ),        /* Offset= 714 (894) */
/* 182 */     NdrFcLong( 0x6000 ),        /* 24576 */
/* 186 */     NdrFcShort( 0x2c8 ),        /* Offset= 712 (898) */
/* 188 */     NdrFcLong( 0x400c ),        /* 16396 */
/* 192 */     NdrFcShort( 0x2c6 ),        /* Offset= 710 (902) */
/* 194 */     NdrFcLong( 0x10 ),          /* 16 */
/* 198 */     NdrFcShort( 0x8002 ),       /* Simple arm type: FC_CHAR */
/* 200 */     NdrFcLong( 0x12 ),          /* 18 */
/* 204 */     NdrFcShort( 0x8006 ),       /* Simple arm type: F C_SHORT */
/* 206 */     NdrFcLong( 0x13 ),          /* 19 */
/* 210 */     NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 212 */     NdrFcLong( 0x16 ),          /* 22 */
/* 216 */     NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 218 */     NdrFcLong( 0x17 ),          /* 23 */
/* 222 */     NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 224 */     NdrFcLong( 0xe ),           /* 14 */
/* 228 */     NdrFcShort( 0x2aa ),        /* Offset= 682 (910) */
/* 230 */     NdrFcLong( 0x400e ),        /* 16398 */
/* 234 */     NdrFcShort( 0x2b0 ),        /* Offset= 688 (922) */
/* 236 */     NdrFcLong( 0x4010 ),        /* 16400 */
/* 240 */     NdrFcShort( 0x2ae ),        /* Offset= 686 (926) */
/* 242 */     NdrFcLong( 0x4012 ),        /* 16402 */
/* 246 */     NdrFcShort( 0x26c ),        /* Offset= 620 (866) */
/* 248 */     NdrFcLong( 0x4013 ),        /* 16403 */
/* 252 */     NdrFcShort( 0x2 6a ),       /* Offset= 618 (870) */
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```
/* 254 */     NdrFcLong( 0x4016 ),        /* 16406 */
/* 258 */     NdrFcShort( 0x264 ),        /* Offset= 612 (870) */
/* 260 */     NdrFcLong( 0x4017 ),        /* 16407 */
/* 264 */     NdrFcShort( 0x25e ),        /* Offset= 606 (870) */
/* 266 */     NdrFcLong( 0x0 ),           /* 0 */
/* 270 */     NdrFcShort( 0x0 ),          /* Offset= 0 (270) */
/* 272 */     NdrFcLong( 0x1 ),           /* 1 */
/* 276 */     NdrFcShort( 0x0 ),          /* Offset= 0 (276) */
/* 278 */     NdrFcShort( 0xffffffff ),   /* Offset= -1 (277) */
/* 280 */
                                          0x15,                       /* FC_STRUCT
*/
                                          0x7,                        /* 7 */
/* 282 */     NdrFcShort( 0x8 ),          /* 8 */
/* 284 */     0xb,                        /* FC_HYPER */
                                          0x5b,                       /* FC_END */
/* 286 */
                                          0x12, 0x0,    /* FC_UP */
/* 288 */     NdrFcShort( 0xe ),          /* Offset= 14 (302) */
/* 290 */
                                          0x1b,                       /* FC_CARRAY
*/
                                          0x1,                        /* 1 */
/* 292 */     NdrFcShort( 0x2 ),          /* 2 */
/* 294 */     0x9,                        /* Corr desc: FC_ULONG */
                                          0x0,                        /*  */
/* 296 */     NdrFcShort( 0xfffc ),       /* -4 */
/* 298 */     NdrFcShort( 0x1 ),          /* Corr flags:  early, */
/* 300 */     0x6,                        /* FC_SHORT */
                                          0x5b,                       /* FC_END */
/* 302 */
                                          0x17,                       /* FC_CSTRUCT
*/
                                          0x3,                        /* 3 */
/* 304 */     NdrFcShort( 0x8 ),          /* 8 */
/* 306 */     NdrFcShort( 0xfffffff0 ),   /* Offset= -16 (290) */
/* 308 */     0x8,                        /* FC_LONG */
                                          0x8,                        /* FC_LONG */
/* 310 */     0x5c,                       /* FC_PAD */
                                          0x5b,                       /* FC_END */
/* 312 */
                                          0x2f,                       /* FC_IP */
                                          0x5a,                       /*
FC_CONSTANT_IID */
/* 314 */     NdrFcLong( 0x0 ),           /* 0 */
/* 318 */     NdrFcShort( 0x0 ),          /* 0 */
/* 320 */     NdrFcShort( 0x0 ),          /* 0 */
/* 322 */     0xc0,                       /* 192 */
                                          0x0,                        /* 0 */
/* 324 */     0x0,                        /* 0 */
                                          0x0,                        /* 0 */
/* 326 */     0x0,                        /* 0 */
                                          0x0,                        /* 0 */
/* 328 */     0x0,                        /* 0 */
                                          0x46,                       /* 70 */
/* 330 */
                                          0x2f,                       /* FC_IP */
                                          0x5a,                       /*
FC_CONSTANT_IID */
/* 332 */     NdrFcLong( 0x20400 ),       /* 132096 */
/* 336 */     NdrFcShort( 0x0 ),          /* 0 */
/* 338 */     NdrFcShort( 0x0 ),          /* 0 */
/* 340 */     0xc0,                       /* 192 */
                                          0x0,                        /* 0 */
/* 342 */     0x0,                        /* 0 */
                                          0x0,                        /* 0 */
/* 344 */     0x0,                        /* 0 */
                                          0x0,                        /* 0 */
/* 346 */     0x0,                        /* 0 */
                                          0x46,                       /* 70 */
/* 348 */
                                          0x12, 0x10,   /* FC_UP [pointer_deref] */
/* 350 */     NdrFcShort( 0x2 ),          /* Offset= 2 (352)  */
/* 352 */
                                          0x12, 0x0,    /* FC_UP */
/* 354 */     NdrFcShort( 0x1e6 ),        /* Offset= 486 (840) */
/* 356 */
                                          0x2a,                       /*
FC_ENCAPSULATED_UNION */
                                          0x89,                       /* 137 */
/* 358 */     NdrFcShort( 0x20 ),         /* 32 */
/* 360 */     NdrFcShort( 0xa ),          /* 10 */
/* 362 */     NdrFcLong( 0x8 ),           /* 8 */
/* 366 */     NdrFcShort( 0x50 ),         /* Offset= 80 (446) */
/* 368 */     NdrFcLong( 0xd ),           /* 13 */
/* 372 */     NdrFcShort( 0x70 ),         /* Offset= 112 (484) */
/* 374 */     NdrFcLong( 0x9 ),           /* 9 */
/* 378 */     NdrFcShort( 0x90 ),         /* Offset= 144 (522) */
/* 380 */     NdrFcLong( 0xc ),           /* 12 */
/* 384 */     NdrFcShort( 0xb0 ),         /* Offset= 176 (560) */
/* 386 */     NdrFcLong( 0x24 ),          /* 36 */
/* 390 */     NdrFcShort( 0x104 ),        /* Offset= 260 (650) */
/* 392 */     NdrFcLong( 0x800d ),        /* 32781 */
/* 396 */     NdrFcShort( 0x120 ),        /* Offset= 288 (684) */
/* 398 */     NdrFcLong( 0x10 ),          /* 16 */
/* 402 */     NdrFcShort( 0x13a ),        /* Offset= 314 (716) */
/* 404 */     NdrFcLong( 0x2 ),           /* 2 */
/* 408 */     NdrFcShort( 0x150 ),        /* Offset= 336 (744) */
/* 410 */     NdrFcLong( 0x3 ),           /* 3 */
/* 414 */     NdrFcShort( 0x166 ),        /* Offset= 358 (772) */
/* 416 */     NdrFcLong( 0x14 ),          /* 20 */
/* 420 */     NdrFcShort( 0x17c ),        /* Offset= 380 (800) */
/* 422 */     NdrFcShort( 0xffffffff ),   /* Offset= -1 (421) */
/* 424 */
                                          0x21,                       /*
FC_BOGUS_ARRAY */
                                          0x3,                        /* 3 */
/* 426 */     NdrFcShort( 0x0 ),          /* 0 */
/* 428 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
/* 430 */     NdrFcShort( 0x0 ),          /* 0 */
/* 432 */     NdrFcShort( 0x1 ),          /* Corr flags:  early, */
/* 434 */     NdrFcLong( 0xffffffff ),    /* -1 */
/* 438 */     NdrFcShort( 0x0 ),          /* Corr flags:  */
/* 440 */
                                          0x12, 0x0,    /* FC_UP */
/* 442 */     NdrFcShort( 0xffffff74 ),   /* Offset= -140 (302) */
/* 444 */     0x5c,                       /* FC_PAD */
                                          0x5b,                       /* FC_END */
/* 446 */
                                          0x1a,                       /*
FC_BOGUS_STRUCT */
                                          0x3,                        /* 3 */
/* 448 */     NdrFcShort( 0x10 ),         /* 16 */
/* 450 */     NdrFcShort( 0x0 ),          /* 0 */
/* 452 */     NdrFcShort( 0x6 ),          /* Offset= 6 (458) */
/* 454 */     0x8,                        /* FC_LONG */
                                          0x39,                       /* FC_ALIGNM8
*/
/* 456 */     0x36,                       /* FC_POINTER */
                                          0x5b,                       /* FC_END */
/* 458 */
                                          0x11, 0x0,    /* FC_RP */
/* 460 */     NdrFcShort( 0xfffffffc ),   /* Offset= -4 (456) */
/* 462 */
                                          0x21,                       /*
FC_BOGUS_ARRAY */
                                          0x3,                        /* 3 */
/* 464 */     NdrFcShort( 0x0 ),          /* 0 */
/* 466 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
                                          0x0,                        /*  */
/* 468 */     NdrFcShort( 0x0 ),          /* 0 */
/* 470 */     NdrFcShort( 0x1 ),          /* Corr flags:  early, */
/* 472 */     NdrFcLong( 0xffffffff ),    /* -1 */
/* 476 */     NdrFcShort( 0x0 ),          /* Corr flags:  */
/* 478 */     0x4c,                       /* FC_EMBEDDED_COMPLEX */
                                          0x0,                        /* 0 */
/* 480 */     NdrFcShort( 0xffffff58 ),   /* Offset= -168 (312) */
/* 482 */     0x5c,                       /* FC_PAD */
                                          0x5b,                       /* FC_END */
/* 484 */
                                          0x1a,                       /*
FC_BOGUS_STRUCT */
                                          0x3,                        /* 3 */
/* 486 */     NdrFcShort( 0x10 ),         /* 16 */
/* 488 */     NdrFcShort( 0x0 ),          /* 0 */
/* 490 */     NdrFcShort( 0x6 ),          /* Offset= 6 (496) */
/* 492 */     0x8,                        /* FC_LONG */
                                          0x39,                       /* FC_ALIGNM8
*/
/* 494 */     0x36,                       /* FC_POINTER */
                                          0x5b,                       /* FC_END */
/* 496 */
                                          0x11, 0x0,    /* FC_RP */
/* 498 */     NdrFcShort( 0xfffffffc ),   /* Offset= -36 (462) */
/* 500 */
                                          0x21,                       /*
FC_BOGUS_ARRAY */
                                          0x3,                        /* 3 */
/* 502 */     NdrFcShort( 0x0 ),          /* 0 */
/* 504 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
                                          0x0,                        /*  */
/* 506 */     NdrFcShort( 0x0 ),          /* 0 */
/* 508 */     NdrFcShort( 0x1 ),          /* Corr flags:  early, */
/* 510 */     NdrFcLong( 0xffffffff ),    /* -1 */
/* 514 */     NdrFcShort( 0x0 ),          /* Corr flags:  */
/* 516 */     0x4c,                       /* FC_EMBEDDED_COMPLEX */
                                          0x0,                        /* 0 */
/* 518 */     NdrFcShort( 0xffffff44 ),   /* Offset= -188 (330) */
/* 520 */     0x5c,                       /* FC_PAD */
                                          0x5b,                       /* FC_END */
/* 522 */
                                          0x1a,                       /*
FC_BOGUS_STRUCT */
                                          0x3,                        /* 3 */
/* 524 */     NdrFcShort( 0x10 ),         /* 16 */
/* 526 */     NdrFcShort( 0x0 ),          /* 0 */
/* 528 */     NdrFcShort( 0x6 ),          /* Offset= 6 (534) */
/* 530 */     0x8,                        /* FC_LONG */
                                          0x39,                       /* FC_ALIGNM8
*/
/* 532 */     0x36,                       /* FC_POINTER */
                                          0x5b,                       /* FC_END */
/* 534 */
                                          0x11, 0x0,    /* FC_RP */
/* 536 */     NdrFcShort( 0xfffffffc ),   /* Offset= -36 (500) */
/* 538 */
                                          0x21,                       /*
FC_BOGUS_ARRAY */
                                          0x3,                        /* 3 */
/* 540 */     NdrFcShort( 0x0 ),          /* 0 */
/* 542 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
                                          0x0,                        /*  */
/* 544 */     NdrFcShort( 0x0 ),          /* 0 */
/* 546 */     NdrFcShort( 0x1 ),          /* Corr flags:  early, */
/* 548 */     NdrFcLong( 0xffffffff ),    /* -1 */
/* 552 */     NdrFcShort( 0x0 ),          /* Corr flags:  */
/* 554 */
                                          0x12, 0x0,    /* FC_UP */
/* 556 */     NdrFcShort( 0x176 ),        /* Offset= 374 (930) */
/* 558 */     0x5c,                       /* FC_PAD */
                                          0x5b,                       /* FC_END */
/* 560 */
                                          0x1a,                       /*
FC_BOGUS_STRUCT */
                                          0x3,                        /* 3 */
/* 562 */     NdrFcShort( 0x10 ),         /* 16 */
/* 564 */     NdrFcShort( 0x0 ),          /* 0 */
/* 566 */     NdrFcShort( 0x6 ),          /* Offset= 6 (572) */
/* 568 */     0x8,                        /* FC_LONG */
                                          0x39,                       /* FC_ALIGNM8
*/
/* 570 */     0x36,                       /* FC_POINTER */
                                          0x5b,                       /* FC_END */
/* 572 */
                                          0x11, 0x0,    /* FC_RP */
/* 574 */     NdrFcShort( 0xfffffffc ),   /* Offset= -36 (538) */
/* 576 */
                                          0x2f,                       /* FC_IP */
                                          0x5a,                       /*
FC_CONSTANT_IID */
/* 578 */     NdrFcLong( 0x2f ),          /* 47 */
/* 582 */     NdrFcShort( 0x0 ),          /* 0 */
/* 584 */     NdrFcShort( 0x0 ),          /* 0 */
/* 586 */     0xc0,                       /* 192 */
                                          0x0,                        /* 0 */
/* 588 */     0x0,                        /* 0 */
                                          0x0,                        /* 0 */
/* 590 */     0x0,                        /* 0 */
                                          0x0,                        /* 0 */
/* 592 */     0x0,                        /* 0 */
                                          0x46,                       /* 70 */
/* 594 */
                                          0x1b,                       /* FC_CARRAY
*/
                                          0x0,                        /* 0 */
/* 596 */     NdrFcShort( 0x1 ),          /* 1 */
/* 598 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
                                          0x0,                        /*  */
/* 600 */     NdrFcShort( 0x4 ),          /* 4 */
/* 602 */     NdrFcShort( 0x1 ),          /* Corr flags:  early, */
/* 604 */     0x1,                        /* FC_BYTE */
                                          0x5b,                       /* FC_END */
/* 606 */
                                          0x1a,                       /*
FC_BOGUS_STRUCT */
                                          0x3,                        /* 3 */
/* 608 */     NdrFcShort( 0x18 ),         /* 24 */
/* 610 */     NdrFcShort( 0x0 ),          /* 0 */
/* 612 */     NdrFcShort( 0xc ),          /* Offset= 12 (624) */
/* 614 */     0x8,                        /* FC_LONG */
                                          0x8,                        /* FC_LONG */
/* 616 */     0x4c,                       /* FC_EMBEDDED_COMPLEX */
                                          0x0,                        /* 0 */
/* 618 */     NdrFcShort( 0xfffffff6 ),   /* Offset= -42 (576) */
/* 620 */     0x39,                       /* FC_ALIGNM8 */
                                          0x36,                       /* FC_POINTER
*/
/* 622 */     0x5c,                       /* FC_PAD */
                                          0x5b,                       /* FC_END */
/* 624 */
                                          0x12, 0x0,    /* FC_UP */
/* 626 */     NdrFcShort( 0xfffffffe0 ),  /* Offset= -32 (594) */
/* 628 */
                                          0x21,                       /*
FC_BOGUS_ARRAY */
                                          0x3,                        /* 3 */
/* 630 */     NdrFcShort( 0x0 ),          /* 0 */
/* 632 */     0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
                                          0x0,                        /*  */
/* 634 */     NdrFcShort( 0x0 ),          /* 0 */
/* 636 */     NdrFcShort( 0x1 ),          /* Corr flags:  early, */
/* 638 */     NdrFcLong( 0xffffffff ),    /* -1 */
/* 642 */     NdrFcShort( 0x0 ),          /* Corr flags:  */
/* 644 */
                                          0x12, 0x0,    /* FC_UP */
/* 646 */     NdrFcShort( 0xfffffff8 ),   /* Offset= -40 (606) */
/* 648 */     0x5c,                       /* FC_PAD */
                                          0x5b,                       /* FC_END */
/* 650 */
                                          0x1a,                       /*
FC_BOGUS_STRUCT */
                                          0x3,                        /* 3 */
/* 652 */     NdrFcShort( 0x10 ),         /* 16 */
/* 654 */     NdrFcShort( 0x0 ),          /* 0 */
/* 656 */     NdrFcShort( 0x6 ),          /* Offset= 6 (662) */
/* 658 */     0x8,                        /* FC_LONG */
                                          0x39,                       /* FC_ALIGNM8
*/
/* 660 */     0x36,                       /* FC_POINTER */
                                          0x5b,                       /* FC_END */
/* 662 */
                                          0x11, 0x0,    /* FC_RP */
/* 664 */     NdrFcShort( 0xfffffffc ),   /* Offset= -36 (628) */
/* 666 */
                                          0x1d,                       /*
FC_SMFARRAY */
                                          0x0,                        /* 0 */
/* 668 */     NdrFcShort( 0x8 ),          /* 8 */
/* 670 */     0x1,                        /* FC_BYTE */
                                          0x5b,                       /* FC_END */
/* 672 */
                                          0x15,                       /* FC_STRUCT
*/
                                          0x3,                        /* 3 */
/* 674 */     NdrFcShort( 0x10 ),         /* 16 */
/* 676 */     0x8,                        /* FC_LONG */
                                          0x6,                        /* FC_SHORT
*/
/* 678 */     0x6,                        /* FC_SHORT */
                                          0x4c,                       /*
FC_EMBEDDED_COMPLEX */
/* 680 */     0x0,                        /* 0 */
              NdrFcShort( 0xffffffe1 ),   /* Offset= -
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15 (666) */
                                        0x5b,                   /* FC_END */
/* 684 */
                                        0x1a,                   /*
FC_BOGUS_STRUCT */
                                        0x3,                    /* 3 */
/* 686 */      NdrFcShort( 0x20 ),      /* 32 */
/* 688 */      NdrFcShort( 0x0 ),       /* 0 */
/* 690 */      NdrFcShort( 0xa ),       /* Offset= 10 (700) */
/* 692 */      0x8,                     /* FC_LONG */
                                        0x39,                   /* FC_ALIGNM8
*/
/* 694 */      0x36,                    /* FC_POINTER */
                                        0x4c,                   /*
FC_EMBEDDED_COMPLEX */
/* 696 */      0x0,                     /* 0 */
                                        NdrFcShort( 0xffffffe7 ),   /* Offset= -
25 (672) */
                                        0x5b,                   /* FC_END */
/* 700 */
                                        0x11, 0x0,    /* FC_RP */
/* 702 */      NdrFcShort( 0xffffff10 ),    /* Offset= -240 (462) */
/* 704 */
                                        0x1b,                   /* FC_CARRAY
*/
                                        0x0,                    /* 0 */
/* 706 */      NdrFcShort( 0x1 ),       /* 1 */
/* 708 */      0x19,                    /* Corr desc:  field pointer, FC_ULONG
*/
                                        0x0,                    /*  */
/* 710 */      NdrFcShort( 0x0 ),       /* 0 */
/* 712 */      NdrFcShort( 0x1 ),       /* Corr flags:  early, */
/* 714 */      0x1,                     /* FC_BYTE */
                                        0x5b,                   /* FC_END */
/* 716 */
                                        0x1a,                   /*
FC_BOGUS_STRUCT */
                                        0x3,                    /* 3 */
/* 718 */      NdrFcShort( 0x10 ),      /* 16 */
/* 720 */      NdrFcShort( 0x0 ),       /* 0 */
/* 722 */      NdrFcShort( 0x6 ),       /* Offset= 6 (728) */
/* 724 */      0x8,                     /* FC_LONG */
                                        0x39,                   /* FC_ALIGNM8
*/
/* 726 */      0x36,                    /* FC_POINTER */
                                        0x5b,                   /* FC_END */
/* 728 */
                                        0x12, 0x0,    /* FC_UP */
/* 730 */      NdrFcShort( 0xfffffff6 ),    /* Offset= -26 (704) */
/* 732 */
                                        0x1b,                   /* FC_CARRAY
*/
                                        0x1,                    /* 1 */
/* 734 */      NdrFcShort( 0x2 ),       /* 2 */
/* 736 */      0x19,                    /* Corr desc:  field pointer, FC_ULONG
*/
                                        0x0,                    /*  */
/* 738 */      NdrFcShort( 0x0 ),       /* 0 */
/* 740 */      NdrFcShort( 0x1 ),       /* Corr flags:  early, */
/* 742 */      0x6,                     /* FC_SHORT */
                                        0x5b,                   /* FC_END */
/* 744 */
                                        0x1a,                   /*
FC_BOGUS_STRUCT */
                                        0x3,                    /* 3 */
/* 746 */      NdrFcShort( 0x10 ),      /* 16 */
/* 748 */      NdrFcShort( 0x0 ),       /* 0 */
/* 750 */      NdrFcShort( 0x6 ),       /* Offset= 6 (756) */
/* 752 */      0x8,                     /* FC_LONG */
                                        0x39,                   /* FC_ALIGNM8
*/
/* 754 */      0x36,                    /* FC_POINTER */
                                        0x5b,                   /* FC_END */
/* 756 */
                                        0x12, 0x0,    /* FC_UP */
/* 758 */      NdrFcShort( 0xfffffff6 ),    /* Offset= -26 (732) */
/* 760 */
                                        0x1b,                   /* FC_CARRAY
*/
                                        0x3,                    /* 3 */
/* 762 */      NdrFcShort( 0x4 ),       /* 4 */
/* 764 */      0x19,                    /* Corr desc:  field pointer, FC_ULONG
*/
                                        0x0,                    /*  */
/* 766 */      NdrFcShort( 0x0 ),       /* 0 */
/* 768 */      NdrFcShort( 0x1 ),       /* Corr flags:  early, */
/* 770 */      0x8,                     /* FC_LONG */
                                        0x5b,                   /* FC_END */
/* 772 */
                                        0x1a,                   /*
FC_BOGUS_STRUCT */
                                        0x3,                    /* 3 */
/* 774 */      NdrFcShort( 0x10 ),      /* 16 */
/* 776 */      NdrFcShort( 0x0 ),       /* 0 */
/* 778 */      NdrFcShort( 0x6 ),       /* Offset= 6 (784) */
/* 780 */      0x8,                     /* FC_LONG */
                                        0x39,                   /* FC_ALIGNM8
*/
/* 782 */      0x36,                    /* FC_POINTER */
                                        0x5b,                   /* FC_END */
/* 784 */
                                        0x12, 0x0,    /* FC_UP */
/* 786 */      NdrFcShort( 0xfffffff6 ),    /* Offset= -26 (760) */
/* 788 */
                                        0x1b,                   /* FC_CARRAY
*/
                                        0x7,                    /* 7 */
/* 790 */      NdrFcShort( 0x8 ),       /* 8 */
/* 792 */      0x19,                    /* Corr desc:  field pointer, FC_ULONG
*/
                                        0x0,                    /*  */
/* 794 */      NdrFcShort( 0x0 ),       /* 0 */
/* 796 */      NdrFcShort( 0x1 ),       /* Corr flags:  early, */
/* 798 */      0xb,                     /* FC_HYPER */
                                        0x5b,                   /* FC_END */
/* 800 */
                                        0x1a,                   /*
FC_BOGUS_STRUCT */
                                        0x3,                    /* 3 */
/* 802 */      NdrFcShort( 0x10 ),      /* 16 */
/* 804 */      NdrFcShort( 0x0 ),       /* 0 */
/* 806 */      NdrFcShort( 0x6 ),       /* Offset= 6 (812) */
/* 808 */      0x8,                     /* FC_LONG */
                                        0x39,                   /* FC_ALIGNM8
*/
/* 810 */      0x36,                    /* FC_POINTER */
                                        0x5b,                   /* FC_END */
/* 812 */
                                        0x12, 0x0,    /* FC_UP */
/* 814 */      NdrFcShort( 0xfffffffe6 ),   /* Offset= -26 (788) */
/* 816 */
                                        0x15,                   /* FC_STRUCT
*/
                                        0x3,                    /* 3 */
/* 818 */      NdrFcShort( 0x8 ),       /* 8 */
/* 820 */      0x8,                     /* FC_LONG */
                                        0x8,                    /* FC_LONG */
/* 822 */      0x5c,                    /* FC_PAD */
                                        0x5b,                   /* FC_END */
/* 824 */
                                        0x1b,                   /* FC_CARRAY
*/
                                        0x3,                    /* 3 */
/* 826 */      NdrFcShort( 0x8 ),       /* 8 */
/* 828 */      0x7,                     /* Corr desc: FC_USHORT */
                                        0x0,                    /*  */
/* 830 */      NdrFcShort( 0xffc8 ),    /* -56 */
/* 832 */      NdrFcShort( 0x1 ),       /* Corr flags:  early, */
/* 834 */      0x4c,                    /* FC_EMBEDDED_COMPLEX */
                                        0x0,                    /* 0 */
/* 836 */      NdrFcShort( 0xffffffec ),    /* Offset= -20 (816) */
/* 838 */      0x5c,                    /* FC_PAD */
                                        0x5b,                   /* FC_END */
/* 840 */
                                        0x1a,                   /*
FC_BOGUS_STRUCT */
                                        0x3,                    /* 3 */
/* 842 */      NdrFcShort( 0x38 ),      /* 56 */
/* 844 */      NdrFcShort( 0xffffffec ),    /* Offset= -20 (824) */
/* 846 */      NdrFcShort( 0x0 ),       /* Offset= 0 (846) */
/* 848 */      0x6,                     /* FC_SHORT */
                                        0x6,                    /* FC_SHORT
*/
/* 850 */      0x38,                    /* FC_ALIGNM4 */
                                        0x8,                    /* FC_LONG */
/* 852 */      0x8,                     /* FC_LONG */
                                        0x4c,                   /*
FC_EMBEDDED_COMPLEX */
/* 854 */      0x4,                     /* 4 */
                                        NdrFcShort( 0xffffffe0d ),   /* Offset= -
499 (356) */
                                        0x5b,                   /* FC_END */
/* 858 */
                                        0x12, 0x0,    /* FC_UP */
/* 860 */      NdrFcShort( 0xffffff02 ),    /* Offset= -254 (606) */
/* 862 */
                                        0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 864 */      0x1,                     /* FC_BYTE */
                                        0x5c,                   /* FC_PAD */
/* 866 */
                                        0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 868 */      0x6,                     /* FC_SHORT */
                                        0x5c,                   /* FC_PAD */
/* 870 */
                                        0x12, 0x8,    /* FC_UP [simple_pointer ]
*/
/* 872 */      0x8,                     /* FC_LONG */
                                        0x5c,                   /* FC_PAD */
/* 874 */
                                        0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 876 */      0xa,                     /* FC_FLOAT */
                                        0x5c,                   /* FC_PAD */
/* 878 */
                                        0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 880 */      0xc,                     /* FC_DOUBLE */
                                        0x5c,                   /* FC_PAD */
/* 882 */
                                        0x12, 0x0,    /* FC_UP */
/* 884 */      NdrFcShort( 0xfffffda4 ),    /* Offset= -604 (280) */
/* 886 */
                                        0x12, 0x10,   /* FC_UP [pointer_deref] */
/* 888 */      NdrFcShort( 0xfffffda6 ),    /* Offset= -602 (286) */
/* 890 */
                                        0x12, 0x10,   /* FC_UP [pointer_deref] */
/* 892 */      NdrFcShort( 0xfffffdbc ),    /* Offset= -580 (312) */
/* 894 */
                                        0x12, 0x10,   /* FC_UP [pointer_deref] */
/* 896 */      NdrFcShort( 0xfffffdca ),    /* Offset= -566 (330) */
/* 898 */
                                        0x12, 0x10,   /* FC_UP [pointer_deref]  */
/* 900 */      NdrFcShort( 0xfffffdd8 ),    /* Offset= -552 (348) */
/* 902 */
                                        0x12, 0x10,   /* FC_UP [pointer_deref] */
/* 904 */      NdrFcShort( 0x2 ),       /* Offset= 2 (906) */
/* 906 */
                                        0x12, 0x0,    /* FC_UP */
                                        0x0,                    /*  */
/* 908 */      NdrFcShort( 0x16 ),      /* Offset= 22 (930)  */
/* 910 */
                                        0x15,                   /* FC_STRUCT
*/
                                        0x7,                    /* 7 */
/* 912 */      NdrFcShort( 0x10 ),      /* 16 */
/* 914 */      0x6,                     /* FC_SHORT */
                                        0x1,                    /* FC_BYTE */
/* 916 */      0x1,                     /* FC_BYTE */
                                        0x38,                   /* FC_ALIGNM4
*/
/* 918 */      0x8,                     /* FC_LONG */
                                        0x39,                   /* FC_ALIGNM8
*/
/* 920 */      0xb,                     /* FC_HYPER */
                                        0x5b,                   /* FC_END */
/* 922 */
                                        0x12, 0x0,    /* FC_UP */
/* 924 */      NdrFcShort( 0xfffffff2 ),    /* Offset= -14 (910) */
/* 926 */
                                        0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 928 */      0x2,                     /* FC_CHAR */
                                        0x5c,                   /* FC_PAD */
/* 930 */
                                        0x1a,                   /*
FC_BOGUS_STRUCT */
                                        0x7,                    /* 7 */
/* 932 */      NdrFcShort( 0x20 ),      /* 32 */
/* 934 */      NdrFcShort( 0x0 ),       /* 0 */
/* 936 */      NdrFcShort( 0x0 ),       /* Offset= 0 (936) */
/* 938 */      0x8,                     /* FC_LONG */
                                        0x8,                    /* FC_LONG */
/* 940 */      0x6,                     /* FC_SHORT */
                                        0x6,                    /* FC_SHORT
*/
/* 942 */      0x6,                     /* FC_SHORT */
                                        0x6,                    /* FC_SHORT
*/
/* 944 */      0x4c,                    /* FC_EMBEDDED_COMPLEX */
                                        0x0,                    /* 0 */
/* 946 */      NdrFcShort( 0xfffffc54 ),    /* Offset= -940 (6) */
/* 948 */      0x5c,                    /* FC_PAD */
                                        0x5b,                   /* FC_END */
/* 950 */      0xb4,                    /* FC_USER_MARSHAL */
                                        0x83,                   /* 131 */
/* 952 */      NdrFcShort( 0x0 ),       /* 0 */
/* 954 */      NdrFcShort( 0x18 ),      /* 24 */
/* 956 */      NdrFcShort( 0x0 ),       /* 0 */
/* 958 */      NdrFcShort( 0xfffffc44 ),    /* Offset= -956 (2) */
/* 960 */
                                        0x11, 0x4,    /* FC_RP [alloced_on_stack]
*/
/* 962 */      NdrFcShort( 0x6 ),       /* Offset= 6 (968) */
/* 964 */
                                        0x13, 0x0,    /* FC_OP */
/* 966 */      NdrFcShort( 0xfffffdc ),     /* Offset= -36 (930) */
/* 968 */      0xb4,                    /* FC_USER_MARSHAL */
                                        0x83,                   /* 131 */
/* 970 */      NdrFcShort( 0x0 ),       /* 0 */
/* 972 */      NdrFcShort( 0x18 ),      /* 24 */
/* 974 */      NdrFcShort( 0x0 ),       /* 0 */
/* 976 */      NdrFcShort( 0xffffffc4 ),    /* Offset= -12 (964) */
                                        0x0
        }
    };

const CInterfaceProxyVtbl * _tpcc_com_ps_ProxyVtblList  [] =
{
    ( CInterfaceProxyVtbl *) &_ITPCCProxyVtbl,
    0
};

const CInterfaceStubVtbl * _tpcc_com_ps_StubVtblList[] =
{
    ( CInterfaceStubVtbl *) &_ITPCCStubVtbl,
    0
};

PCInterfaceName const _tpcc_com_ps_InterfaceNamesList[] =
{
    "ITPCC",
    0
};


#define _tpcc_com_ps_CHECK_IID(n)          IID_GENERIC_CHECK_IID( _tpcc_com_ps,
pIID, n)

int __stdcall _tpcc_com_ps_IID_Lookup( const IID * pIID, int * pIndex )
{

    if(!_tpcc_com_ps_CHECK_IID(0))
        {
        *pIndex = 0;
        return 1;
        }

    return 0;
}

const ExtendedProxyFileInfo tpcc_com_ps_ProxyFileInfo =
{
    (PCInterfaceProxyVtblList *) & _tpcc_com_ps_ProxyVtblList,
    (PCInterfaceStubVtblList *) & _tpcc_com_ps_StubVtblList,
    (const PCInterfaceName * ) & _tpcc_com_ps_In  terfaceNamesList,
    0, // no delegation
    & _tpcc_com_ps_IID_Lookup,
    1,
```

```
    2,
    0, /* table of [async_uuid] interfaces */
    0, /* Filler1 */
    0, /* Filler2 */
    0  /* Filler3 */
};

#endif /* defined(_M_IA64) || defined(_M_AXP64)*/
```

Appendix B : Database Design

Build Scripts

setup.cmd

```
::-------------------------------------------------------------------------------
---------
::---  FILE:       RUNSQLCFG.CMD
::---              Microsoft TPC -C Kit Ver. 4.41
::---              Copyright M icrosoft, 2001
::---              All Rights Reserved
::----
::---  PURPOSE:    Calls RunSQLCfg.sql to configure SQL Server
::----
::---  ARGUMENTS:  Optionally, the user can pass the following positional
arguments:
::---                 Server Name
::---                 sa SQL Server account password
::---                 Number of Warehouses
::---                 Build Option
::----
{full,builddb,objects,objectsfull,bulkload,bulkloadfull,backup}
::---                 Database Type
::---                    {normal or scale_down}
::----
::---              If they are not passed, then the user will be prompted by the
VBS file.
::---
::-------------------------------------------------------------------------------
---------
@cscript SetupScripts \setup.vbs //H:CScript //I %1 %2 %3 %4 %5
```

backup.sql

```
--  File:     BACKUP.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            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, tpccback5 with
init, stats = 1

select @enddate = getdate()
select "End date: ", c onvert(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. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates tpcc database Backup Devices


use master
go

--  create backup devices

exec sp_addumpdevice 'disk','tpccback1','S:  \tpccback1x5hbaL100gTzPcf3850w2.dmp'
go
exec sp_addumpdevice 'disk','tpccback2','T:  \tpccback2x5hbaL100gTzPcf3850w2.dmp'
go
exec sp_addumpdevice 'disk','tpccback3','U:  \tpccback3x5hbaL100gTzPcf3850w2.dmp'
go
exec sp_addumpdevice 'disk','tpccback4','V:  \tpccback4x5hbaL100gTzPcf3850w2.dmp'
go
exec sp_addumpdevice 'disk','tpccback5','W:  \tpccback5x5hbaL100gTzPcf3850w2.dmp'
go
```

createdb.sql

```
--  File:     CREATEDB.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            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
go

create table tpcc_timer
(
              start_date                                          char(30),
              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
(             NAME                        = MSSQL_tpcc_root,
              FILENAME      = "c:\MSSQL_tpcc_root.mdf",
              SIZE                        = 8MB,
              FILEGROWTH    = 0),
FILEGROUP     MSSQL_misc_fg
(             NAME                        = MSSQL_misc1,
              FILENAME      = "F:",
              SIZE                        = 36900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_misc2,
              FILENAME      = "G:",
              SIZE                        = 36900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_misc3,
              FILENAME      = "H:",
              SIZE                        = 36900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_misc4,
              FILENAME      = "I:",
              SIZE                        = 36900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_misc5,
              FILENAME      = "J:",
              SIZE                        = 36900MB,
              FILEGROWTH    = 0),
FILEGROUP     MSSQL_cs_fg
(             NAME                        = MSSQL_cs1,
              FILENAME      = "M:",
              SIZE                        = 59900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_cs2,
              FILENAME      = "N:",
              SIZE                        = 59900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_cs3,
              FILENAME      = "O:",
              SIZE                        = 59900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_cs4,
              FILENAME      = "P:",
              SIZE                        = 59900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_cs5,
              FILENAME      = "Q:",
              SIZE                        = 59900MB,
              FILEGROWTH    = 0)
LOG ON
(             NAME                        = MSSQL_tpcc_log1,
              FILENAME      = "E:",
              SIZE                        = 100000MB,
              FILEGROWTH    = 0)
COLLATE Latin1_General_BIN
go

-- Store ending time
update        tpcc_timer
set           end_date      = (select convert(char(30), getdate(),9))
go

select "Elapsed time (in seconds): ", datediff(second,(sel   ect 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
go
```

removedb.sql

```
--  File:     REMOVEDB.SQL
--            Microsoft  TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Removes tpcc database and backup files


use master
go

--  remove any existing database and backup files

exec sp_dbremove tpcc, dropdev
go

exec sp_dropdevice 'tpccback1'
exec sp_dropdevice 'tpccback2'
exec sp_dropdevice 'tpccback3'
exec sp_dropdevice 'tpccback4'
exec sp_dropdevice 'tpccback5'
go
```

restore.sql

```
--  File:     RESTORE.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft,  2001
--  Purpose:  Loads database backup from backup files


declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

load database tpcc from tpccback1, tpccback2, tpccbac  k3, tpccback4, tpccback5
with stats = 1, replace

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

go
```

idxcuscl.sql

```
--  File:     IDXCUSCL.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on customer 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 = 'customer_c1' )
            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

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

go
```

idxcusnc.sql

```
--  File:     IDXCUSNC.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates non -clustered index on customer 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 = 'customer_nc1' )
            drop index customer.customer_nc1

create unique nonclustered index customer_nc1 on customer(c_w_id, c_d_id, c_last,
c_first, c_id)
            on MSSQL_cs_fg

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

go
```

idxdiscl.sql

```
--  File:     IDXDISCL.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 200 1
--  Purpose:  Creates clustered index on district 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 wh  ere name = 'district_c1' )
            drop index district.district_c1

create unique clustered index  district_c1 on district(d_w_id, d_id)
            with fillfactor=100 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
```

idxhiscl.sql

```
--  File:     IDXHISCL.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on   history table
--
--  CAUTION:  ****************************************
--  CAUTION:  This index is only beneficial for systems
--  CAUTION:  with 8 or more processors.
--  CAUTION:  It may negatively impact performance on
--  CAUTION:  on systems with l ess than 8 processors.
--  CAUTION:  ****************************************


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select na me from sysindexes where  name = 'history_c1' )
            drop index history.history_c1

--create unique clustered index history_c1 on history(h_c_w_id, h_date, h_c_d_id,
h_c_id, h_amount)
--            on MSSQL_misc_fg

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

go
```

idxitmcl.sql

```
--  File:     IDXITMCL.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on item 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 = 'it  em_c1' )
            drop index item.item_c1

create unique clustered index item_c1 on item(i_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
```

idxnodcl.sql

```
--  File:     IDXNODCL.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on new_order 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 = 'new_order_c1' )
            drop index new_order.new_order_c1

create unique clustered index new_order_c1   on new_order(no_w_id, no_d_id,
no_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
```

idxodlcl.sql

```
--  File:     IDX ODLCL.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on order_line table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getd ate()
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)

go
```

idxordcl.sql

```
--  File:     IDXORDCL.SQL
--            Mi crosoft TPC -C Benchmark Kit Ver. 4.41
--            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:", con vert(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. 4.41
--            Copyright Micr osoft, 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 s ysindexes 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. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on stock 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 = 'stock_c1' )
             drop index stock.stock_c1

create uniq ue clustered index stock_c1 on stock(s_i_id, s_w_id)
             on MSSQL_cs_fg

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

go
```

idxwarcl.sql

```
--  File:     IDXWARCL.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on warehouse table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startda te = 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)
             with fillfactor =100 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
```

tables.sql

```
--  File:     TABLES.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates TPC -C tables


use tpcc
go


--
--  Remove all existing TPC -C tables
--

if exists ( select name from sysobjects where name = 'warehouse' )
             drop table warehouse
go
if exists ( select name from sysobjects where name = 'district' )
             drop table district
go
if exists ( select name from sysobjects where name = 'customer' )
             drop table customer
go
if exists ( select name from sysobjects where name = 'history' )
             drop table histo ry
go
if exists ( select name from sysobjects where name = 'new_order' )
             drop table new_order
go
if exists ( select name from sysobjects where name = 'orders' )
             drop table orders
go
if exists ( select name from sysobjects where name = 'order_line' )
             drop table order_line
go
if exists ( select name from sysobjects where name = 'item' )
             drop table item
go
if exists ( select name from sysobjects where name = 'stock' )
             drop table stock
go

--
--  Create new tables
--

create table warehouse
(
             w_id                                    smallint,
             w_name                                  char(10),
             w_street_1                    char(20),
             w_street_2                    char(20),
             w_city                                  char(20),
             w_state                                 char(2),
             w_zip                                   char(9),
             w_tax                                   numeric(4,4),
             w_ytd                                   numeric(12,2)
) on MSSQL_misc_fg
go

create table district
(
             d_id                                    tinyint,
             d_w_id                                  smallint,
             d_name                                  char(10),
             d_street_1                    char(20),
             d_street_2                    char(20),
             d_city                                  char(20),
             d_state                                 char(2),
             d_zip                                   char(9),
             d_tax                                   numeric(4,4),
             d_ytd                                   numeric(12,2),
             d_next_o_id                   int
) on MSSQL_misc_fg
go

create table customer
(
             c_id                                    int,
             c_d_id                                  tinyint,
             c_w_id                                  smallint,
             c_first                                 char(16),
             c_middle                      char(2),
             c_last                                  char(16),
             c_street_1                    char(20),
             c_street_2                    char(20),
             c_city                                  char(20),
             c_state                                 char(2),
             c_zip                                   char(9),
             c_phone                                 char(16),
             c_since                                 datetime,
             c_credit                      char(2),
             c_credit_lim          numeric(12,2),
             c_discount                    numeric(4,4),
             c_balance                     numeric(12,2),
             c_ytd_payment         numeric(12,2),
             c_payment_cnt         smallint,
             c_delivery_cnt                smallint,
             c_data                                  char(500)
) on MSSQL_cs_fg
go

create table history
(
             h_c_id                                  int,
             h_c_d_id                      tinyint,
             h_c_w_id                      smallint,
             h_d_id                                  tinyint,
             h_w_id                                  smallint,
             h_date                                  datetime,
             h_amount                      numeric(6,2),
             h_data                                  char(24)
) on MSSQL_misc_fg
go

create table new_order
(
             no_o_id                                 int,
             no_d_id                                 tinyint,
             no_w_id                                 smallint
) on MSSQL_misc_fg
go

create table orders
(
             o_id                                    int,
             o_d_id                                  tinyint,
             o_w_id                                  smallint,
```

```
            o_c_id                                          int,
            o_entry_d                       datetime,
            o_carrier_id            tinyint,
            o_ol_cnt                        tinyint,
            o_all_local                     tinyint
) on MSSQL_misc_fg
go

create table order_line
(
            ol_o_id                                         int,
            ol_d_id                                         tinyint,
            ol_w_id                                         smallint,
            ol_number                       tinyint,
            ol_i_id                                         int,
            ol_supply_w_id                  smallint,
            ol_delivery_d           datetime,
            ol_quantity                     smallint,
            ol_amount                       numeric(6,2),
            ol_dist_info            char(24)
) on MSSQL_misc_fg
go

create table item
(
            i_id                                            int,
            i_im_id                                         int,
            i_name                                          char(24),
            i_price                                         numeric(5,2),
            i_data                                          char(50)
) on MSSQL_misc_fg
go

create table stock
(
            s_i_id                                          int,
            s_w_id                                          smallint,
            s_quantity                      smallint,
            s_dist_01                       char(24),
            s_dist_02                       char(24),
            s_dist_03                       char(24),
            s_dist_04                       char(24),
            s_dist_05                       char(24),
            s_dist_06                       char(24),
            s_dist_07                       char(24),
            s_dist_08                       char(24),
            s_dist_09                       char(24),
            s_dist_10                       char(24),
            s_ytd                                           int,
            s_order_cnt                     smallint,
            s_remote_cnt            smallint,
            s_data                                          char(50)
) on MSSQL_cs_fg
go
```

dbopt1.sql

```
--  File:     DBOPT1.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Sets database options for da  ta load


use master
go

exec sp_dboption tpcc,'select into/bulkcopy',true
exec sp_dboption tpcc,'trunc. log on chkpt.',true
exec sp_dboption tpcc,'torn page detection',false
go

use tpcc
go

checkpoint
go
```

dbopt2.sql

```
--  File:     DBOPT2.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Resets database options after data load

exec sp_dboption tpcc,'select into/bulkcopy',false
exec sp_dboption tpcc,'trunc. log on chkpt.',false
exec sp_dbopti on tpcc,'torn page detection',false
GO

USE tpcc
GO

CHECKPOINT
GO

sp_configure 'allow updates',1
GO

RECONFIGURE WITH OVERRIDE
GO

DECLARE       @msg                      varchar(50)

--                                              --
--        OPTIONS FOR SQL SERVER 2000           --
-- Set option values for user -defined indexes  --
--                                              --

SET           @msg          = ' '
PRINT         @msg
SET           @msg          = 'Setting SQL Server indexoptions'
PRINT         @msg
SET           @msg          = ' '
PRINT         @msg

EXEC sp_indexoption         'customer',    'DisAllowPageL ocks',        TRUE
EXEC sp_indexoption         'district',    'DisAllowPageLocks',         TRUE
EXEC sp_indexoption         'warehouse',   'DisAllowPageLocks',         TRUE
EXEC sp_indexoption         'stock',       'DisAllowPageLocks',         TRUE
EXEC sp_indexoption         'order_line',  'DisAllowRowLocks',          TRUE
EXEC sp_index option        'orders',      'DisAllowRowLocks',          TRUE
EXEC sp_indexoption         'new_order',   'DisAllowRowLocks',          TRUE
EXEC sp_indexoption         'item',                     'DisAllowRowLocks',
            TRUE
EXEC sp_indexoption         'item',                     'DisAllowPageLocks',
            TRUE
GO

Print ' '
Print '******************'
Print 'Pre-specified Locking Hierarchy:'
Print '         Lockflag = 0 ==> No pre -specified hierarchy'
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 Tabl  e-level'
Print ' '

SELECT        name,lockflags
FROM          sysindexes
WHERE         object_id('warehouse')      = id OR
              object_id('district')       = id OR
              object_id('customer')       = id OR
              object_id('stock')          = id OR
              object_id('orders')         = id OR
              object_id('order_line')     = id OR
              object_i d('history')       = id OR
              object_id('new_order')      = id OR
              object_id('item')           = id
ORDER         BY lockflags asc
GO

sp_configure 'allow updates',0
GO

RECONFIGURE WITH OVERRIDE
GO

EXEC sp_dboption tpcc,       'auto update statistics',    FALSE
EXEC sp_dboption tpcc,       'auto create statistics',    FALSE
GO

EXEC sp_tableoption          'district',    'pintable',true
EXEC sp_tableoption          'warehouse',   'pintable',true
EXEC sp_tableoption          'new_order',   'pintable',true
EXEC sp_tableoption          'item',                     'pintable',true
GO
```

VerifyTpccLoad.sql

```
--  File:     V ERIFYTPCCLOAD.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Performs series of TPCC database checks to verify
--                  that database load completed correctly

print         " "
select        convert(char(3 0), getdate(),9)
print         " "

use tpcc
go

--            ***********************************
--
--            Check rows per table from SYSINDEXES
--
--            ***********************************

print         'WAREHOUSE TABLE'

select        rows
from          sysindexes
where         id            = object_id("warehouse")
go

print         'DISTRICT TABLE = (10 * No of warehouses)'

select        rows
from          sysindexes
where         id            =object_id("district")
go

print         'ITEM TABLE = 100,000'

select        rows
from          sysindexes
where         id            =object_id("item")
go

print         'CUSTOMER TABLE = (30,000 * No of warehouse  s)'

select        rows
from          sysindexes
where         id            =object_id("customer")
go

print 'ORDERS TABLE = (30,000 * No of warehouses)'

select        rows
from          sysindexes
where         id            =object_id("orders")
go

print         'HISTORY TABLE = (30,000 * No of warehouses)'

select        rows
from          sysindexes
where         id            =object_id("history")
go

print         'STOCK TABLE = (100,000 * No of warehouses)'

select        rows
from          sysindexes
where         id            =object_id("stock")
go

print         'ORDER_LINE TABLE = (300,000 * No of warehouses + some change)'

select        rows
from          sysindexes
```

```
where       id          =object_id("order_line")
go

print       'NEW_ORDER TABLE = (9000 * No of warehouses)'

select      rows
from        sysindexes
where       id          =object_id("new_order")
go

--          *************
--
--          Check indices
--
--          *************

print '**************Index Check***********  *****'

use tpcc
go

sp_helpindex  customer
go

sp_helpindex  stock
go

sp_helpindex  district
go

sp_helpindex  item
go

sp_helpindex  new_order
go

sp_helpindex  orders
go

sp_helpindex  order_line
go

sp_helpindex  warehouse
go
```

version.sql

```
--  File:     VERSIO N.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Extracts current version of SQL Server


use master
go

SELECT      CONVERT(char(20), SERVERPROPERTY('ProductVersion'))
go

SELECT      CONVERT(char(20) , SERVERPROPERTY('ProductLevel'))
go

SELECT      CONVERT(char(30), getdate(),9)
go
```

setup.vbs

```
'-----------------------------------------------------------------------------
--------
'---  FILE:      SETUP.VBS
'---            Microsoft TPC -C Kit Ver. 4 .41
'---            Copyright Microsoft, 2001
'---            All Rights Reserved
'---
'---  PURPOSE:   This module performs the tasks to create and populate a TPC   -C
database
'---
'-----------------------------------------------------------------------   ----------
--------
'------------------------------------------
'--- open an windows scripting object
'------------------------------------------
set WshShell = CreateObject("WScript.Shell")
'--------------------------------------------------
'--- before we go any further, make sure that
'--- we are running Windows Scripting Host 5.6
'--- or higher
'--------------------------------------------------
If wScript.Version < 5.6 Then
            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!   !!!!!!!!!!"
            wScript.Echo
"!!                                                                       !!"
            wScript.Echo "!! You do not have the proper version of the Windows
Scripting Host   !!"
            wScript.Echo "!! installed.  Please install the latest Windows
Scripting Host from  !!"
            wScript.Echo "!! .. \tools\wsh\scripten.exe and restart
setup.                 !!"
            wScript.Echo
"!!                                                                       !!"
            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!  !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
            wScript.Quit
End If
'------------------------------------------
'--- display banner message
'------------------------------------------
wScript.Echo
"*********************************************************************   *****"
wScript.Echo "*
*"
wScript.Echo "*  Microsoft TPC -C Benchmark Kit Ver. 4.41  - Setup
*"
wScript.Echo "*
*"
wScript.Echo
"****************************************************************************"
'--------------------------------------------------
'--- define function to check for any error messages
'----------------------------  ----------------------
Function CheckSQLOutput(SQL_Out)
            ErrorFlag = 0
            Set SQL_fso = CreateObject("Scripting.FileSystemObject")
            If SQL_fso.FileExists(SQL_Out) Then
                        Set SQL_Out_File = SQL_fso.OpenTextFile(SQL_Out,1)
                        Do While SQL_Out_File.AtEndOfStrea  m <> True
                                    SQL_Line = SQL_Out_File.ReadLine
                                    'first check to see if the output
contains a message about the login password
                                    If InStr(SQL_Line, "Login failed") Then
                                                'display the messages and
get out of here
                                                ErrorFlag = 1
                                                wScript.Echo "The  login for
userid 'sa' failed."
                                                wScript.Echo "Please
restart SETUP with the correct password."
                                    Else
                                                If InStr(SQL_Line, "Msg")
Then
                                                            'find out
where the "Msg" indicator is in the line
                                                            LocMsg =
InStr(SQL_Line, "Msg")
                                                            'find out
where the comma is after the error code
                                                            LocComma =
InStr(SQL_Line, ",")
                                                            'now isolate
the error code
                                                            ErrorCode =
Mid(SQL_Line, (LocMsg + 4), (LocComma  - (LocMsg + 4)))
                                                            Select Case
ErrorCode

            Case " 170"

            ErrorFlag = 1

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "Syntax Error."

            wScript.Echo "SQL Server Error 170."

            wScript.Echo "Check CREATEDB.SQL."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!  !!!!!"

            Case "1801"

            ErrorFlag = 1

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "Database 'tpcc' already exists."

            wScript.Echo "SQL Server Error 1801."

            wScript.Echo "Check CREATE DB.SQL."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case "1802"

            ErrorFlag = 1

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "CREATE DATABASE failed."

            wScript.Echo "SQL Server Error 1802."

            wScript.Echo "Check CREATEDB.SQL."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case "1921"

            ErrorFlag = 1

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!  !!!!!!!!!!!!!!!!!!"

            wScript.Echo "CREATE INDEX failed."

            wScript.Echo "SQL Server Error 1921."

            wScript.Echo "Check " & SQL_Out & "."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case "3013"
                                    ErrorFlag = 1
                                    wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "BACKUP DATABASE is terminating abnormally."

            wScript.Echo "SQL Server Error 3013."

            wScript.Echo "Che ck the SQL Server error log for more details."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case "3201"
                                    ErrorFlag = 1
                                    wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!  !!!!!!!!!!!!!"

            wScript.Echo "Cannot open backup device."
```

```
            wScript.Echo "Device error or device off -line."

            wScript.Echo "SQL Server Error 3201."

            wScript.Echo "See the SQL Server error log for more details."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case "5105"
                                    ErrorFlag = 1
                                    wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "Device Activation Error."

            wScript.Echo "SQL Server Error 5105."

            wScript.Echo "Check CREATEDB.SQL."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case "5170"

            ErrorFlag = 1

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! !!!!!!!!!!!!!!!!!"

            wScript.Echo "Cannot create one or more files because it already
exists."

            wScript.Echo "SQL Server Error 5170."

            wScript.Echo "Check CREATEDB.SQL."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! !!!!!!!!"

            Case "15010","15012"

            ErrorFlag = 0

            Case "15069"

            ErrorFlag = 1

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "One or more users are using the database."

            wScript.E cho "The requested operation cannot be completed."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case Else

            ErrorFlag = 1

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "An error occurred."

            wScript.Echo "SQL Server Error Code: " & ErrorCode & "."

            wScript.Echo "Check " & SQL_Out & " for more information."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
                                                        End Select
                                                End If
                                        End If
                        Loop
                        SQL_Out_File.Close
            End If
            CheckSQLOutput = ErrorFlag
End Function
'------------------------------------------
'--- end function
'------------------------------------------
'-------------------------------------------------------  ---
'--- define function to prompt for user input if necessary
'---------------------------------------------------------
Function GetUserInput(UserInput)
            Select Case UserInput
                        Case "ServerName"
                                    '--- pre-fill the prompt with the
machine name
                                    TempServerName =
WshShell.ExpandEnvironmentStrings("%COMPUTERNAME%")
                                    '--- prompt the use for the setup
particulars
                                    TempResponse = InputBox("Enter your
server name","TPC -C Setup",TempServerName)
                                    Do While TempResponse = ""
                                                rc = MsgBox ("You must
enter a valid server name.",21)
                                                If rc = 2 Then
                                                            wScript.Echo
""
                                                            wScript.Echo
"TPC-C Setup cancelled by user."
                                                            wScript.Quit
                                                End If
                                                TempResponse =
WshShell.ExpandEnvironmentStrings("%COMPUTERNAME%")
                                                TempResponse =
InputBox("Enter yo ur server name","TPC -C Setup",TempServerName)
                                    Loop
                        Case "saPassword"
                                    TempResponse = InputBox("Enter the 'sa'
password")
                        Case "NumberWarehouses"
                                    TempResponse = InputBox("Enter the
number of warehouses to build","TPC  -C Setup")
                                    Do While TempRe sponse = ""
                                                rc = MsgBox ("You must
enter a value for Number of Warehouses.",21)
                                                If rc = 2 Then
                                                            wScript.Echo
""
                                                            wScript.Echo
"TPC-C Setup cancelled by user."
                                                            wScript.Quit
                                                End If
                                                TempResponse =
InputBox("Enter the number of war  ehouses to build","TPC -C Setup")
                                    Loop
                        Case "BuildOption"
                                    TempResponse = InputBox("Build Option" &
Chr(13) & "(full,builddb,objects,objectsfull,bulkload,bulkloadfull,backup)","TPC    -
C Setup","full")
                                    Flag = 0
                                    Do While Flag = 0
                                                Select Case Tem pResponse
                                                            Case
"full","Full","FULL"

            TempResponse = "full"

            Flag = 1
                                                            Case
"builddb","BuildDB","Builddb","BUILDDB"

            TempResponse = "builddb"

            Flag = 1
                                                            Case
"objects","Objects","OBJECTS"

            TempResponse = "objects"

            Flag = 1
                                                            Case
"objectsfull","ObjectsFull","Objectsfull","OBJECTSFULL"

            TempResponse = "objectsfull"

            Flag = 1
                                                            Case
"bulkload","BulkLoad","Bulkload","BULKLOAD"

            TempResponse = "bulkload"

            Flag = 1
                                                            Case
"bulkloadfull ","BulkLoadFull","Bulkloadfull","BULKLOADFULL"

            TempResponse = "bulkloadfull"

            Flag = 1
                                                            Case
"backup","Backup","BACKUP"

            TempResponse = "backup"

            Flag = 1
                                                            Case Else

            rc = MsgBox ("Invalid Database Build Option.",21)

            If rc = 2 Then

            wScript.Echo ""

            wScript.Echo "TPC -C Setup cancelled by user."

            wScript.Quit

            End If

            Flag = 0

            TempResponse = InputBox("Build Option" & Chr(13) &
"(full,builddb,objects,objectsfull,bulkload,bulkloadfull,ba   ckup)",,"full")

                                                End Select
                                    Loop
                        Case "DatabaseType"
                                    TempResponse = InputBox("Database Type"
& Chr(13) & "(normal or scale_down)","TPC  -C Setup","normal")
                                    '--- set flag
                                    Flag = 0
                                    Do While Flag = 0
                                                Select Case TempResponse
                                                            Case
"normal","Normal","NORMAL"

            TempResponse = "0"

            Flag = 1
                                                            Case
"scale_down","Scale_Down","Scale_down","SCALE_DOWN"

            TempResponse = "1"

            Flag = 1
                                                            Case Else

            rc = MsgBox ("Invalid Database Type.",21)

            If rc = 2 T hen

            wScript.Echo ""

            wScript.Echo "TPC -C Setup cancelled by user."

            wScript.Quit

            End If

            Flag = 0

            TempResponse = InputBox("Database Type" & Chr(13) & "(normal or
scale_down)",,"normal")
                                                End Select
                                    Loop
            End Select
            GetUserInput = TempResponse
End Function
'------------------------------------------
'--- end function
'------------------------------------------
'-----------------------------------------------
'--- Initialize an array of the TPC -C table names
'-----------------------------------------------
Dim TableArray(8)
```

```
TableArray(0) = "warehouse"
TableArray(1) = "district"
TableArray(2) = "customer"
TableArray(3) = "history"
TableArray(4) = "new_order"
TableArray(5) = "orders"
TableArray(6) = "order_line"
TableArray(7) = "item"
TableArray(8) = "stock"
'------------------------------------------------------------
'--- Initialize an array of the TPC -C build log file names
'------------------------------------------------------------
Dim LogFileArray(21)
LogFileArray(0 )  = "version.log"
LogFileArray(1)  = "removedb.log"
LogFileArray(2)  = "createdb.log"
LogFileArray(3)  = "tables.log"
LogFileArray(4)  = "dbopt1.log"
LogFileArray(5)  = "idxordcl.log"
LogFileArray(6)  = "idxitmcl.log"
LogFileArray(7)  = "idxwarcl.log"
LogFileArray(8)  = "idxcuscl.log"
LogFileArray(9)  = "idxnodcl.log"
LogFileArray(10) = "idxdiscl.log"
LogFileArray(11) = "idxstkcl.log"
LogFileArray(12) = "idxodlcl.log"
LogFileArray(13) = "idxcusnc.log"
LogFileArray(14) = "idxhiscl.log"
LogFileArray(15) = "i dxordnc.log"
LogFileArray(16) = "bulkload.log"
LogFileArray(17) = "dbopt2.log"
LogFileArray(18) = "nurand_load.log"
LogFileArray(19) = "backupdev.log"
LogFileArray(20) = "backupdev.log"
LogFileArray(21) = "verifyload.log"
'------------------------------ ---------
'--- open a file system object
'-----------------------------------------
Set fs = CreateObject("Scripting.FileSystemObject")
'-----------------------------------------
'--- grab the current directory value
'-------------------------------------  ------
SetupDirectory = WshShell.CurrentDirectory & "  \"
'SetupDirectory = "C: \MSTPCC.441 \"
'-----------------------------------------
'--- now calculate the other directories
'-----------------------------------------
ACIDDirectory = LEFT(SetupDirectory,  (LEN(SetupDirectory) -6))
ScriptDirectory = SetupDirectory & "SCRIPTS  \"
LogDirectory = SetupDirectory & "LOGS  \"
'-------------------------------------------------------------------
'--- now determine if the user passed us any parameters.
'--- the order  should be ServerName, sa Password, Number of Warehouses,
'--- Build Option, and Database Type
'-------------------------------------------------------------------
Set objArgs = wScript.Arguments
Select Case objArgs.Length
        Case 0
                '------------------- ----------------------
                '--- get the server name
                '----------------------------------------
                ServerName = GetUserInput("ServerName")
                '----------------------------------------
                '--- get the sa password
                '-----------------------------------------  -
                saPassword = GetUserInput("saPassword")
                '----------------------------------------
                '--- get the number of warehouses
                '----------------------------------------
                NumberWarehouses = GetUserInput("NumberWarehouses")
                '------------------------- --------------
                '--- get the build option
                '----------------------------------------
                BuildOption = GetUserInput("BuildOption")
                '----------------------------------------
                '--- get the database type
                '----------------------------------------
                DatabaseType = GetUserInput("DatabaseType")
        Case 1
                '-----------------------------------------------------
                '--- assume that the server name was passed correctly
                '-----------------------------------------------------
                '------------------------------ ------------
                '--- store the server name
                '----------------------------------------
                ServerName = objArgs(0)
                '----------------------------------------
                '--- get the sa password
                '----------------------------------------
                saPassword = GetUserI nput("saPassword")
                '----------------------------------------
                '--- get the number of warehouses
                '----------------------------------------
                NumberWarehouses = GetUserInput("NumberWarehouses")
                '----------------------------------------
                '--- get the build option
                '----------------------------------------
                BuildOption = GetUserInput("BuildOption")
                '----------------------------------------
                '--- get the database type
                '----------------------------------------
                DatabaseType = GetUserIn put("DatabaseType")
                If DatabaseType = "scale_down" or DatabaseType =
"Scale_Down" or DatabaseType = "Scale_down" Then
                        DatabaseType = 1
                Else
                        DatabaseType = 0
                End If
        Case 2
                '-------------------------------------------------------
---------------
                '--- assume that the server name and sa password was
passed correctly
                '-------------------------------------------------------
---------------
                '----------------------------------------
                '--- store the server name
                '------------------------------- --------
                ServerName = objArgs(0)
                '----------------------------------------
                '--- store the sa password
                '----------------------------------------
                saPassword = objArgs(1)
                '----------------------------------------
                '--- get the number of war ehouses
                '----------------------------------------
                NumberWarehouses = GetUserInput("NumberWarehouses")
                '----------------------------------------
                '--- get the build option
                '----------------------------------------
                BuildOption = GetUserInput ("BuildOption")
                '----------------------------------------
                '--- get the database type
                '----------------------------------------
                DatabaseType = GetUserInput("DatabaseType")
                If DatabaseType = "scale_down" or DatabaseType =
"Scale_Down" or Databa seType = "Scale_down" Then
                        DatabaseType = 1
                Else
                        DatabaseType = 0
                End If
        Case 3
                '-------------------------------------------------------
-----------------------------------
                '--- assume that the server name,sa password, and
number of warehouse s was passed correctly
                '-------------------------------------------------------
-----------------------------------
                '----------------------------------------
                '--- store the server name
                '----------------------------------------
                ServerName = obj Args(0)
                '----------------------------------------
                '--- store the sa password
                '----------------------------------------
                saPassword = objArgs(1)
                '----------------------------------------
                '--- store the number of warehouses
                '------------------------- ----------------------
                NumberWarehouses = objArgs(2)
                '----------------------------------------
                '--- get the build option
                '----------------------------------------
                BuildOption = GetUserInput("BuildOption")
                '------------------------- --------------
                '--- get the database type
                '----------------------------------------
                DatabaseType = GetUserInput("DatabaseType")
                If DatabaseType = "scale_down" or DatabaseType =
"Scale_Down" or DatabaseType = "Scale_down" Then
                        DatabaseType = 1
                Else
                        DatabaseType = 0
                End If
        Case 4
                '-------------------------------------------------------
-----------------------------------------------
                '--- assume that the server name,sa password,number of
warehouses, and build option was passed correctl  y
                '-------------------------------------------------------
-----------------------------------------------
                '----------------------------------------
                '--- store the server name
                '----------------------------------------
                ServerName = objArgs(0)
                '----------------------------------------
                '--- store the sa password
                '----------------------------------------
                saPassword = objArgs(1)
                '----------------------------------------
                '--- store the number of warehouses
                '---------------------- --------------------
                NumberWarehouses = objArgs(2)
                '----------------------------------------
                '--- store the build option
                '----------------------------------------
                BuildOption = objArgs(3)
                '----------------------------------------
                '--- get the database type
                '----------------------------------------
                DatabaseType = GetUserInput("DatabaseType")
                If DatabaseType = "scale_down" or DatabaseType =
"Scale_Down" or DatabaseType = "Scale_down" Then
                        DatabaseType = 1
                Else
                        DatabaseType  = 0
                End If
        Case 5
                '-------------------------------------------------------
-
                '--- assume all the parameters were passed in
correctly
                '-------------------------------------------------------
-
                '----------------------------------------
                '--- store the server name
                '----------------------------------------
                ServerName = objArgs(0)
                '----------------------------------------
                '--- store the sa password
                '----------------------------------------
                saPassword = objArgs(1)
                '------------------- ----------------------
                '--- store the number of warehouses
                '----------------------------------------
                NumberWarehouses = objArgs(2)
                '----------------------------------------
                '--- store the build option
                '-------------------------------------  ----
                BuildOption = objArgs(3)
                '----------------------------------------
                '--- get the database type
                '----------------------------------------
                DatabaseType = objArgs(4)
                If DatabaseType = "scale_down" or DatabaseType =
"Scale_Down" or Database Type = "Scale_down" Then
                        DatabaseType = 1
                Else
                        DatabaseType = 0
                End If
End Select
'------------------------------------------------------------
'--- now that we have all the variables filled in, let's get to work
'--- cleanup any old .err  files
'------------------------------------------------------------
For i = 0 to 8
        If fs.FileExists(LogPath & TableArray(i) & ".err") Then
                fs.DeleteFile LogPath & TableArray(i) & ".err"
        End If
Next
For i = 0 to 21
        If fs.FileExists(LogPath & Lo gFileArray(i)) Then
```

```
                    fs.DeleteFile LogPath & LogFileArray(i)
            End If
Next
'-------------------------------------------------------------------
'--- now grab the version of SQL Server you are running this against
'-------------------------------------------  -------------------------
Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" & ServerName & "  -e
-i" & ScriptDirectory & "utility \version.sql  -o" & LogDirectory & "version.log")
Do While oExec.Status = 0
    wScript.Sleep 100
Loop
rc = CheckSQL Output(LogDirectory & "version.log")
If rc <> 0 Then
            wScript.Quit
End If
If (BuildOption = "full" OR BuildOption = "builddb") Then
            wScript.Echo "Removing any existing TPCC database and backup
devices..."
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPass word & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & NumberWarehouses &
".war \database \removedb.sql  -o" & LogDirectory & "removedb.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "removedb.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Building database files and database..."
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & NumberWarehouses &
".war \database \createdb.sql  -o" & LogDir ectory & "createdb.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "createdb.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
End If
'----------------------------------------
'--- build tables and stored pr ocedures
'----------------------------------------
If (BuildOption = "full" OR BuildOption = "builddb" _
    OR BuildOption = "objects" OR BuildOption = "objectsfull") Then
            wScript.Echo "Creating TPC -C database tables..."
            Set oExec = WshShell.Exec("osq l -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & NumberWarehouses & ".war  \ddl\tables.sql
-o" & LogDirectory & "tables.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "tables.log"  )
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Creating database objects..."
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & "dml \neword.sql  -o" & LogDirectory &
"sp_neword.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_neword.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & "dml \payment.sql  -o" & LogDirectory &
"sp_payment.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_payment.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword &  " -S" &
ServerName & "  -e -i" & ScriptDirectory & "dml \ordstat.sql  -o" & LogDirectory &
"sp_ordstat.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_ordstat.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & "dml \delivery.sql  -o" & LogDirectory &
"sp_delivery.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirector y & "sp_delivery.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & "dml \stocklev.sql  -o" & LogDirectory &
"sp_stocklev.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_stocklev.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & "dml \version.sql  -o" & LogDirectory &
"sp_version.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_version.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Database object creation complete..."
End If
If (BuildOptio n = "full" OR BuildOption = "builddb" _
    OR BuildOption = "objects" OR BUildOption = "objectsfull" _
    OR BuildOption = "bulkload" OR BuildOption = "bulkloadfull") Then
            wScript.Echo "Setting database options before load..."
            Set oExec = WshShell.Exec ("osql -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & "utility \dbopt1.sql  -o" & LogDirectory
& "dbopt1.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "dbopt1.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            '-------------------------------------------------------------
            '--- before we start tpccldr.exe, check the registry
            '--- to ensure that the Shared Memory Protocol is off.
            '--- if it is on, store the setting so we can return
            '--- the system to the pre -tpccldr state.
            '-------------------------------------------------------------
            SharedMemoryRegKey =
WshShell.RegRead("HKEY_LOCAL_MACHINE  \SOFTWARE \Microsoft \MSSQLServer \Client \Shared
MemoryOn")
            If SharedMemoryRegKey = 1 Then
                        WshShell. RegWrite
"HKEY_LOCAL_MACHINE \SOFTWARE \Microsoft \MSSQLServer \Client \SharedMemoryOn", 0,
"REG_DWORD"
            End If
            wScript.Echo "Beginning data load and index creation..."
            CMD_String = SetupDirectory & "  \loader\bin\tpccldr.exe"
            CMD_String = CMD_String & "   -S" & ServerName
            CMD_String = CMD_String & "   -Usa"
            CMD_String = CMD_String & "   -P" & saPassword
            CMD_String = CMD_String & "   -W" & NumberWarehouses
            CMD_String = CMD_String & "   -f" & LogDirectory & "bulkload.log"
            CMD_String = CMD_String & "   -L" & LogDirector y
            CMD_String = CMD_String & "   -d" & ScriptDirectory & NumberWarehouses
& ".war \ddl"
            CMD_String = CMD_String & "   -c" & DatabaseType
            oExec = WshShell.Run(CMD_String, 2, true)
            '-------------------------------------------------------------
            '--- now that the lo ader is finished, put the
            '--- SharedMemoryOn registry key back to its original
            '--- value.
            '-------------------------------------------------------------
            If SharedMemoryRegKey = 1 Then
                        WshShell.RegWrite
"HKEY_LOCAL_MACHINE \SOFTWARE \Microsoft \MSSQLServer \Client \SharedMemoryOn", 1,
"REG_DWORD"
            End If
            wScript.Echo "Setting database options after load..."
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & "utility \dbopt2.sql  -o" & LogDirectory
& "dbopt2.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "dbopt2.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Data load and index creation complete."
            '----------------------------------------
            '--- now parse the index creation logs
            '--- to see if there were any errors
            '--- there.
            '----------------------------------------
            For i = 5 to 15
                        rc = CheckSQLOutput(LogDirectory & LogFileArray(i))
                        If rc <> 0 Then
                                    wScript.Quit
                        End If
            Next
            wScript.Echo "Calculating initial database space usage...."
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ACIDDirectory & "space \scripts\spused.sql  -o" &
ACIDDirectory & "space \spused.ver")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ACIDDirectory & "space \scripts\splog.sql  -o" &
ACIDDirectory & "space \splog.ver")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ACIDDirectory & "space \scripts\spfiles.sql  -o" &
ACIDDirectory & "space \spfiles.ver")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            '-------------------- ------------------
            '--- now that the loader is finished
            '--- check the .err files and if they
            '--- are of zero length, delete them.
            '----------------------------------------
            Set fsErr = CreateObject("Scripting.FileSystemObject")
            Set fErr = fsErr.GetF older(LogDirectory)
            Set fcErr = fErr.Files
            For Each f1 In fcErr
                        If f1.Type = "ERR File" Then
                                    If f1.Size = 0 Then
                                                f1.Delete
                                    End If
                        End If
            Next
            Set fcErr = Nothing
            Set fErr = Nothing
            Set fsErr = Nothing
End If
If (BuildOption = "full" _
    OR BUildOption = "objectsfull" _
    OR BuildOption = "bulkloadfull" _
    OR BuildOption = "backup") Then
            wScript.Echo "Creating Backup Device(s)..."
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirect ory & NumberWarehouses &
".war \database \backupdev.sql  -o" & LogDirectory & "backupdev.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "backupdev.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo  "Backing up database..."
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & NumberWarehouses &
".war \database \backup.sql  -o" & LogDirectory & "backup.log")
            Do While oExec.Status = 0
                wScript.Sle ep 100
            Loop
```

```
            rc = CheckSQLOutput(LogDirectory & "backup.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Database backup complete."
End If
If (BuildOption = "full" _
    OR BUildOption = "objectsfull" _
    OR BuildOption = "bulkloadfull") The  n
            wScript.Echo "Verifying TPC -C database load..."
            Set oExec = WshShell.Exec("osql  -Usa -P" & saPassword & "  -S" &
ServerName & "  -e -i" & ScriptDirectory & "utility \verifytpccload.sql  -o" &
LogDirectory & "verifyload.log")
            Do While oExec.Status = 0
                wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "verifyload.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Check logs \verifyload.log to verify database load."
End If
'----------------------------------------
'--- display banne r message
'----------------------------------------
wScript.Echo
"*******************************************************************************"
wScript.Echo "*
*"
wScript.Echo "*  M icrosoft TPC -C Benchmark Kit Ver. 4.41  - Setup Complete
*"
wScript.Echo "*
*"
wScript.Echo
"*********************************************************************    "
```

Stored Procedures

delivery.sql

```
--  File:     DELIVERY.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates delivery transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists (select name from sysobjects where name = 'tpcc_delivery' )
            drop procedure tpcc_delivery
go

create proc tpcc_delivery   @w_id          smallint,

                                                @o_carrier_id   smallint
as


declare @d_id tinyint,
       @o_id int,
        @c_id int,
       @total              numeric(12,2),
       @oid1 int,
       @oid2 int,
       @oid3 int,
       @oid4 int,
       @oid5 int,
       @oid6 int,
       @oid7 int,
       @oid8 int,
       @oid9 int,
       @oid10              int

select @d_id = 0

begin tran d

            while (@d_id < 10)
            begin

                  select            @d_id  = @d_id + 1,
                                    @total = 0,
                                    @o_id  = 0

                        select      top 1
                                    @o_id        = no_o_id
                        from        new_order (serializable updlock)
                        where       no_w_id      = @w_id and
                                    no_d_id      = @d_id
                        order       by no_o_id asc

                        if (@@rowcount <> 0)
                            begin

--  claim the order for this district

                                    delete       new_order
                                    where        no_w_id       = @w_id and
                                                 no_d_id       = @d_id and
                                                 no_o_id       = @o_id

--  set carrier_id on this order (and get customer id)

                                    update       orders
                                    set          o_carrier_id  =
@o_carrier_id,
                                                 @c_id
                  = o_c_id
                                    where        o_w_id
                  = @w_id and
                                                 o_d_id
                  = @d_id and
                                                 o_id
                  = @o_id

--  set date in all lineitems for this order (and sum amounts)

                                    update       order_line
                                    set          ol_delivery_d = getdate(),
                                                 @total
                  = @total + ol_amount
                                    where        ol_w_id
                  = @w_id and
                                                 ol_d_id
                  = @d_id and
                                                 ol_o_id
                  = @o_id

--  accummulate lineitem amounts for this order into customer

                                    update       customer
                                    set          c_balance     = c_balance +
@total,
                                                 c_delivery_cnt
                  = c_delivery_cnt  + 1
                                    where        c_w_id
                  = @w_id and
                                                 c_d_id
                  = @d_id and
                                                 c_id
                  = @c_id

                        end

                  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,
                   @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,
                   @oid6 = case @d_id when  6  then @o_id else @oid6 end,
                    @oid7 = case @d_id when  7  then @o_id else @oid7 end,
                   @oid8 = case @d_id when  8  then @o_id else @oid8 end,
                   @oid9 = case @d_id when  9  then @o_id else @oid9 end,
                   @oid10 = case @d_id when 10 then @o_id else @   oid10 end

    end

commit tran d

-- return delivery data to client

select @oid1,
       @oid2,
       @oid3,
       @oid4,
       @oid5,
       @oid6,
       @oid7,
       @oid8,
       @oid9,
       @oid10

go
```

neword.sql

```
--  File:     NEWORD.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates new order transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists ( select name from sysobjects where name = 'tpcc  _neworder' )
            drop procedure tpcc_neworder
go

create proc tpcc_neworder
                                                @w_id
smallint,
                                                @d_id
tinyint,
                                                @c_id
int,
                                                @o_ol_cnt
tinyint,
                                                @o_all_local
tinyint,
                                                @i_id1  int =
0, @s_w_id1  smal lint = 0, @ol_qty1  smallint = 0,
                                                @i_id2  int =
0, @s_w_id2  smallint = 0, @ol_qty2  smallint = 0,
                                                @i_id3  int =
0, @s_w_id3  smallint = 0, @ol_qty3  smallint = 0,
                                                @i_id4  int =
0, @s_w_id4  smallint = 0, @ol_qty4  smallint = 0,
                                                @i_id5   int =
0, @s_w_id5  smallint = 0, @ol_qty5  smallint = 0,
                                                @i_id6  int =
0, @s_w_id6  smallint = 0, @ol_qty6  smallint = 0,
                                                @i_id7  int =
0, @s_w_id7  smallint = 0, @ol_qty7  smallint = 0,
                                                @i_id8  int =
0, @s_w_id8  smallint = 0, @ol_qty8  sm  allint = 0,
                                                @i_id9  int =
0, @s_w_id9  smallint = 0, @ol_qty9  smallint = 0,
                                                @i_id10 int =
0, @s_w_id10 smallint = 0, @ol_qty10 smallint = 0,
                                                @i_id11 int =
0, @s_w_id11 smallint = 0, @ol_qty11 smallint = 0,
                                                @i_id12 int =
0, @s_w_id12 sm allint = 0, @ol_qty12 smallint = 0,
                                                @i_id13 int =
0, @s_w_id13 smallint = 0, @ol_qty13 smallint = 0,
                                                @i_id14 int =
0, @s_w_id14 smallint = 0, @ol_qty14 smallint = 0,
                                                @i_id15 int =
0, @s_w_id15 smallint = 0, @ol_qty15 smallint = 0


as
declare       @w_tax          numeric(4,4),
       @d_tax          numeric(4,4),
       @c_last         char(16),
       @c_credit       char(2),
       @c_discount     numeric(4,4),
       @i_price        numeric(5,2),
       @i_name         char(24)  ,
       @i_data         char(50),
```

```
        @o_entry_d      datetime,
        @remote_flag    int,
        @s_quantity     smallint,
        @s_data         char(50),
        @s_dist         char(24),
              @li_no          int,
              @o_id                       int,
              @commit_flag    tinyint,
        @li_id          int,
        @li_s_w_id      smallint,
        @li_qty         smallint,
              @ol_number    int,
              @c_id_local   int

begin

begin transaction n

--  get district tax and next availible order id and update
--  plus initialize local variables

              update        district
              set           @d_tax       = d_tax,
                            @o_id        = d_next_o_id,
                            d_next_o_id  = d_next_o_id + 1,
                            @o_entry_d   = getdate(),
                            @li_no       = 0,
                            @commit_flag = 1
              where         d_w_id       = @w_id and
                            d_id         = @d_id

--  process orderlines

              while (@li_no < @o_ol_cnt)
              begin

                            select @li_no = @li_no + 1

--  set i_id, s_w_id, and qty for this lineitem

                            select        @li_id = case @li_no
                                                  when 1 then @i_id1
                                                  when 2 then @i_id2
                                                  when 3 then  @i_id3
                                                  when 4 then @i_id4
                                                  when 5 then @i_id5
                                                  when 6 then @i_id6
                                                  when 7 then @i_id7
                                                  when 8 then @i_id8
                                                  when 9 then @i_id9
                                                  when 10 then @i_id10
                                                  when 11 then @i_id11
                                                  when 12 then @i_id12
                                                  when 13 then @i_id13
                                                  when 14 then @i_id14
                                                  when 15 then @i_id15
                                                  end,

                                          @li_s_w_id = case @li_no
                                                        when 1 then @s_w_id1
                                                        when 2 then @s_w_id2
                                                        when 3 then @s_w_id3
                                                        when 4 then @s_w_id4
                                                        when 5 then @s_w_id5
                                                        when 6 then @s_w_id6
                                                        when 7 then @s_w_id7
                                                        when 8 then @s_w_id8
                                                        when 9 then @s_w_id9
                                                        when 10 then @s_w_id10
                                                        when 11 then @s_w_id11
                                                        when 12 then @s_w_id12
                                                        when 13 then @s_w_id13
                                                        when 14 then @s_w_id14
                                                        when 15 then @s_w_id15
                                                        end,

                                          @li_qty = case  @li_no
                                                        when 1 then @ol_qty1
                                                        when 2 then @ol_qty2
                                                        when 3 then @ol_qty3
                                                        when 4 then @ol_qty4
                                                        when 5 then @ol_qty5
                                                        when 6 then  @ol_qty6
                                                        when 7 then @ol_qty7
                                                        when 8 then @ol_qty8
                                                        when 9 then @ol_qty9
                                                        when 10 then @ol_qty10
                                                        when 11 then @ol_qty11
                                                        when 12 then @ol_qty12
                                                        when 13 then @ol_qty13
                                                        when 14 then @ol_qty14
                                                        when 15 then @ol_qty15
                                                        end

--  get item data (no one updates item)

                            select        @i_price = i_price,
                                          @i_name  = i_name,
                                          @i_data  = i_data
                            from          item (tablock repeatableread)
                            where         i_id = @li_id

--  update stock values

                            update        stock
                            set           s_ytd                       = s_ytd +
@li_qty,
                                          @s_quantity   = s_quantity   = s_quantity
- @li_qty +

case when (s_quantity  - @li_qty < 10) then 91 else 0 end,
                                          s_order_cnt    = s_order_cnt + 1,
                                          s_remote_cnt  = s_remote_cnt + case when
(@li_s_w_id = @w_id) then 0 else 1 end,
                                          @s_data                     = s_data,
                                          @s_dist                     = case @d_id
                                            when 1
then s_dist_01
                                            when 2
then s_dist_02
                                            when 3
then s_dist_03
                                            when 4
then s_dist_04
                                            when 5
then s_dist_05
                                            when 6
then s_dist_06
                                            when 7
then s_dist_07
                                            when 8
then s_dist_08
                                            when 9
then s_dist_09
                                            when 10
then s_dist_10
                                            end
                            where         s_i_id                      = @li_id and
                                          s_w_id                      = @li_s_w_id

--  if there actually is a stock (and item) with these ids, go to work

                            if (@@rowcount > 0)
                            begin

--  insert order_line data (using data from item and stock)

                                          insert into order_line values(@o_id,

@d_id,

@w_id,

@li_no,

@li_id,

@li_s_w_id,

'dec 31, 1899',

@li_qty,

@i_price * @li_qty,

@s_dist)

--  send line-item data to client

                                          select        @i_name,
                                                        @s_quantity,
                                                        b_g = case when
( (patindex('%ORIGINAL%',@i_data) > 0) and

(patindex('%ORIGINAL%',@s_data) > 0) )
                                                             then 'B' else 'G' end,
                                                        @i_price,
                                                        @i_price * @li_qty

                            end
                            else
                            begin

--  no item (or stock) found  - triggers rollback condition

                                          select '',0,'',0,0
                                          select @commit_flag = 0

                            end
              end

--  get customer last name, discount, and credit rating

                            select        @c_last     = c_last,
                                          @c_discount = c_discount,
                                          @c_credit   = c_credit,
                                          @c_id_local = c_id
                            from          customer (repeatableread)
                            where         c_id                        = @c_id and
                                          c_w_id                      = @w_id and
                                          c_d_id                      = @d_id

--  insert fresh row into orders table

                            insert into orders values (  @o_id,
                                                                                    @d_id,
                                                                                    @w_id,
                                                                                    @c_id_local,
                                                                                    @o_entry_d,
                                                                                    0,
                                                                                    @o_ol_cnt,
                                                                                    @o_all_local)

--  insert corresponding row into new -order table

                            insert into new_order values (              @o_id,
                                                                                    @d_id,
                                                                                    @w_id)

--  select warehouse tax

                            select        @w_tax        = w_tax
                            from          warehouse (repeatableread)
                            where         w_id          = @w_id

                            if (@commit_flag = 1)
                                          commit transaction n
                            else

--  all that work for nuthin!!!

                                          rollback transaction n

--  return order data to client

                            select        @w_tax,
                                          @d_tax,
                                          @o_id,
                                          @c_last,
                                          @c_discount,
                                          @c_credit,
                                          @o_entry_d,
                                          @commit_flag

end

go
```

ordstat.sql

```
--  File:     ORDSTAT.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates order status transaction stored proc  edure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists ( select name from sysobjects where name = 'tpcc_orderstatus' )
            drop procedure   tpcc_orderstatus
go

create proc tpcc_orderstatus              @w_id         smallint,
                                                        @d_id         tinyint,

                                                        @c_id         int,
                                                        @c_last       char(16) = ''



as

declare @c_balance                        numeric(12,2),
        @c_first                          char(16),
        @c_middle                         char(2),
        @o_id                             int,
        @o_entry_d                        datetime,
        @o_carrier_id                     smallint,
        @cnt                              smallint

begin tran o

if (@c_id = 0)
            begin

--  get customer id and info using last name

                            select        @cnt          = (count(*)+1)/2
                            from          customer (repeatableread)
                            where         c_last        = @c_last and
                                          c_w_id        = @w_id and
                                          c_d_id        = @d_id

                            set           rowcount @cnt

                            select        @c_id                       = c_id,
                                          @c_balance    = c_balance,
                                             @c_first   = c_first,
                                             @c_last    = c_last,
                                             @c_middle  = c_middle
                            from          customer (repeatableread)
                            where         c_last                      = @c_last and
                                          c_w_id                      = @w_id and
                                          c_d_id                      = @d_id
                            order         by c_w_id, c_d_id, c_last,  c_first

                            set           rowcount 0
            end

            else

            begin

--  get customer info if by id

                            select        @c_balance    = c_balance,
                                          @c_first      = c_first,
                                          @c_middle     = c_middle,
                                          @c_last                     = c_last
                            from          customer (repeatableread)
                            where         c_id                        = @c_id and
                                          c_d_id                      = @d_id and
                                          c_w_id                      = @w_id


                            select        @cnt          = @@rowcount

            end

--  if no such customer
            if (@cnt = 0)
            begin
                        raiserror('Customer not found',18,1)
                        goto custnotfound
            end

--  get order info

                        select        @o_id                       = o_id,
                                      @o_entry_d    = o_entry_d,
                                      @o_carrier_id = o_carrier_id
                        from          orders (serializable)
                        where         o_c_id                      = @c_id and
                                      o_d_id                      = @d_id and
                                      o_w_id                      = @w_id
                        order         by o_id asc

--  select order lines for the current order

                        select        ol_supply_w_id,
                                      ol_i_id,
                                      ol_quantity,
                                      ol_amount,
                                      ol_delivery_d
                        from          order_line (repeatableread)
                        where         ol_o_id = @o_id and
                                      ol_d_id = @d_id and
                                      ol_w_id = @w_id

custnotfound:

commit tran o

--  return data to client

select        @c_id,
              @c_last,
              @c_first,
              @c_middle,
              @o_entry_d,
              @o_carrier_id,
              @c_balance,
              @o_id

go
```

payment.sql

```
--  File:     PAYMENT.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates payment transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists (select name from sysobjects where name = 'tpcc_payment' )
            drop procedure tpcc_payment
go

create proc tpcc_payment    @w_id          smallint,
                                                        @c_w_id       smallint,
                                                        @h_amount
numeric(6,2),
                                                        @d_id         tinyint,
                                                        @c_d_id       tinyint,
                                                        @c_id         int,
                                                        @c_last       char(16) =
''


as
declare  @w_street_1    char(20),
         @w_street_2    char(20),
         @w_city        char(20),
         @w_state        char(2),
         @w_zip         char(9),
         @w_name        char(10),
         @d_street_1    char(20),
         @d_street_2    char(20),
         @d_city        char(20),
         @d_state       char(2),
         @d_zip         char(9),
         @d_name        char(10),
         @c_first       char(16),
         @c_middle      char(2),
         @c_street_1    char(20),
         @c_street_2    char(20),
         @c_city        char(20),
         @c_state       char(2),
         @c_z ip         char(9),
         @c_phone       char(16),
         @c_since       datetime,
         @c_credit      char(2),
         @c_credit_lim  numeric(12,2),
         @c_balance     numeric(12,2),
         @c_discount    numeric(4,4),
         @da ta          char(500),
         @c_data        char(500),
         @datetime      datetime,
         @w_ytd         numeric(12,2),
         @d_ytd         numeric(12,2),
         @cnt           smallint,
         @val           sma llint,
         @screen_data       char(200),
               @d_id_local   tinyint,
               @w_id_local   smallint,
               @c_id_local   int

select @screen_data = ''

begin tran p

--  get payment date

              select        @datetime = getdate()

              if (@c_id = 0)
              begin

--  get customer id and info using last name

                            select        @cnt          = count(*)
                            from          customer (repeatableread)
                            where         c_last        = @c_last and
                                          c_w_id        = @c_w_id and
                                          c_d_id        = @c_d_id


                            select        @val = (@cnt + 1) / 2
                            set           rowcount @v al

                            select        @c_id         = c_id
                            from          customer (repeatableread)
                            where         c_last        = @c_last and
                                          c_w_id        = @c_w_id and
                                          c_d_id        = @c_d_id
                            order         by c_last, c_first

                            set           rowcount 0
              end

--  get customer info and update balances

              update        customer
              set           @c_balance    = c_balance   = c_balance  - @h_amount,
                            c_payment_cnt = c_payment_cnt + 1,
                            c_ytd_payment = c_ytd_payment + @h_amount,
                            @c_first      = c_first,
                            @c_middle     = c_middle,
                            @c_last                     = c_last,
                            @c_street_1   = c_street_1,
                            @c_street_2   = c_street_2,
                            @c_city                     = c_city,
                            @c_state      = c_state,
                            @c_zip                      = c_zip,
                            @c_phone      = c_phone,
                            @c_credit     = c_credit,
                            @c_credit_lim = c_credit_lim,
                            @c_discount   = c_discount,
                            @c_since      = c_since,
                            @data                       = c_data,
```

```
                        @c_id_local    = c_id
                where   c_id                    = @c_id and
                        c_w_id                  = @c_w_id and
                        c_d_id                  = @c_d_id

--  if customer has bad credit get some more info

                if (@c_credit = 'BC')
                begin

--              compute new info

                        select @c_data          = convert(char(5),@c_id) +
                                                  convert(char(4),@c_d_id)
+
                                                  convert(char(5),@c_w_id)
+
                                                  convert(char(4),@d_id) +
                                                  convert(char(5),@w_id) +

convert(char(19),@h_amount) +
                                                  substring(@data, 1, 458)

--  update customer info

                        update          customer
                        set             c_data          = @c_data

                        where           c_id            = @c_id and
                                        c_w_id          = @c_w_id and
                                        c_d_id          = @c_d_id

                        select          @screen_data = substring (@c_data,1,200)
                end

--  get district data and update year  -to-date

                update          district
                set             d_ytd                   = d_ytd + @h_amount,
                                @d_street_1     = d_street_1,
                                @d_street_2     = d_street_2,
                                @d_city                 = d_city,
                                @d_state        = d_state,
                                @d_zip                  = d_zip,
                                @d_name                 = d_name,
                                @d_id_local     = d_id
                where           d_w_id                  = @w_id and
                                d_id                    = @d_id

--  get warehouse data an d update year -to-date

                update          warehouse
                set             w_ytd                   = w_ytd + @h_amount,
                                @w_street_1     = w_street_1,
                                @w_street_2     = w_street_2,
                                @w_city                 = w_city,
                                @w_state        = w_state,
                                @w_zip                  = w_zip,
                                @w_name                 = w_name,
                                @w_id_local     = w_id
                where           w_id                    = @w_id

--  create history record

                insert into history values (            @c_id_local,
                                                        @c_d_id,
                                                        @c_w_id,
                                                        @d_id_local,
                                                        @w_id_local,
                                                        @datetime,
                                                        @h_amount,
                                                        @w_name + '
' + @d_name)
commit tran p

--  return data to client

select          @c_id,
                @c_last,
                @datetime,
                @w_street_1,
                @w_street_2,
                @w_city,
                @w_state,
                @w_zip,
                @d_street_1,
                @d_street_2,
                @d_city,
                @d_state,
                @d_zip,
                @c_first,
                @c_middle,
                @c_street_1,
                @c_street_2,
                @c_city,
                @c_state,
                @c_zip,
                @c_phone,
                @c_since,
                @c_credit,
                @c_credit_lim,
                @c_discount,
                @c_balance,
                @screen_data

go
```

stocklev.sql

```
--  File:     STOCKLEV.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsof t, 2001
--  Purpose:  Creates stock level transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists (select name from sysobjects where name = 'tpcc_stocklevel' )
                drop procedure tpcc_stocklevel
go

create proc tpcc_stocklevel  @w_id         smallint,
                                                        @d_id         tinyint,
                                                        @threshhold   smallint
as

declare         @o_id_low int,
                @o_id_high int

select          @o_id_low     = (d_next_o_id  - 20),
                @o_id_high    = (d_next_o_id  - 1)
from            district
where           d_w_id                  = @w_id and
                d_id                    = @d_id

select          count(distinct(s_i_id))
from            stock, order_line
where           ol_w_id                 =  @w_id and
                ol_d_id                 =  @d_id and
                ol_o_id                    between @o_id_low and
                                           @o_id_high and
                s_w_id                  =  ol_w_id and
                s_i_id                  =  ol_i_id and
                s_quantity     <  @threshhold

go
```

Loader Source Code

tpccldr.dsp

```
# Microsoft Developer Studio Project File   - Name="tpccldr"  - Package Owner=<4>
# Microsoft Developer Studio Generated Build File, Format Version 6.00
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Console Application" 0x0103

CFG=tpccldr  - Win32 Release

!MESSAGE This is not a valid makefile. To build this project using NMAKE,
!MESSAGE use the Export Makefile command and run
!MESSAGE
!MESSAGE NMAKE /f "tpccldr.mak".
!MESSAGE
!MESSAGE You can specify a configuration when running NM  AKE
!MESSAGE by defining the macro CFG on the command line. For example:
!MESSAGE
!MESSAGE NMAKE /f "tpccldr.mak" CFG="tpccldr   - Win32 Release"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "tpccldr  - Win32 Release" (based  on "Win32 (x86) Console Application")
!MESSAGE "tpccldr  - Win32 Debug" (based on "Win32 (x86) Console Application")
!MESSAGE

# Begin Project
# PROP AllowPerConfigDependencies 0
# PROP Scc_ProjName ""$/mstpcc.400/setup/loader/mssql70", QROAAAAA"
# PROP Scc_LocalPath "."
CPP=cl.exe
RSC=rc.exe

!IF  "$(CFG)" == "tpccldr  - Win32 Release"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir ". \Release"
# PROP BASE Intermediate_Dir ". \Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC  0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \objects"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_CONSOLE" /YX /c
# ADD CPP /nologo /MT /W3 /GX /O2 /D   "NDEBUG" /D "WIN32" /D "_CONSOLE" /D
"DBNTWIN32" /FD /c
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib w  inspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
/nologo /subsystem:console /machine:I386
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib o  leaut32.lib uuid.lib odbc32.lib odbccp32.lib
odbcbcp.lib /nologo /subsystem:console /pdb:none /machine:I386

!ELSEIF  "$(CFG)" == "tpccldr  - Win32 Debug"

# 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
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ". \bin"
# PROP Intermediate_Dir ". \objects"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "  WIN32" /D "_DEBUG" /D "_CONSOLE"
/YX /c
# ADD CPP /nologo /MTd /W3 /Gm /GX /ZI /Od /D "_DEBUG" /D "WIN32" /D "_CONSOLE"
/D "DBNTWIN32" /FR /FD /c
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# 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 odbccp32.lib
/nologo /subsystem:console /debug /machine:I386
# ADD LINK32  kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
odbcbcp.lib /nologo /subsystem:console /pdb:none /debug /machine:I386

!ENDIF
```

```
# Begin Target

# Name "tpccldr  - Win32 Release"
# Name "tpccldr  - Win32 Debug"
# Begin Group "Source Files"

# PROP Default_Filter "cpp;c;cxx;rc;def;r;odl;hpj;bat;for;f90"
# Begin Source File

SOURCE=.\src\getargs.c
# End Source File
# Begin Source File

SOURCE=.\src\random.c
# End Source File
# Begin Source File

SOURCE=.\src\strings.c
# End Source File
# Begin Source File

SOURCE=.\src\time.c
# End Source File
# Begin Source File

SOURCE=.\src\tpccldr.c
# End Source File
# End Group
# Begin Group "Header Files"

# PROP Default_Filter "h;h pp;hxx;hm;inl;fi;fd"
# Begin Source File

SOURCE=.\src\tpcc.h
# End Source File
# End Group
# Begin Group "Resource Files"

# PROP Default_Filter "ico;cur;bmp;dlg;rc2;rct;bin;cnt;rtf;gif;jpg;jpeg;jpe"
# End Group
# End Target
# End Project
```

tpccldr.dsw

```
Microsoft Developer Studio Workspace File, Format Version 6.00
# WARNING: DO NOT EDIT OR DELETE THIS WORKSPACE FILE!

###############################################################################

Project: "tpccldr"=.\tpccldr.dsp  - Package Owner=<4>

Package=<5>
{{{
    begin source code control
    "$/Backup/setup/loader", ZGABAAAA
    .
    end source code control
}}}

Package=<4>
{{{
}}}

###############################################################################

Global:

Package=<5>
{{{
}}}

Package=<3>
{{{
}}}

###############################################################################
```

tpccldr.mak

```
# Microsoft Developer Studio Generated NMAKE File, Format Version 4.10
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Console Application" 0x0103

!IF "$(CFG)" == ""
CFG=tpccldr  - Win32 Debug
!MESSAGE No configuration specified.  Defaulting to tpccldr    - Win32 Debug.
!ENDIF

!IF "$(CFG)" != "tpccldr  - Win32 Release" && "$(CFG)" != \
 "tpccldr  - Win32 Debug"
!MESSAGE Invalid configuration "$(CFG)" specifi  ed.
!MESSAGE You can specify a configuration when running NMAKE on this makefile
!MESSAGE by defining the macro CFG on the command line.  For example:
!MESSAGE
!MESSAGE NMAKE /f "tpccldr.mak" CFG="tpccldr    - Win32 Debug"
!MESSAGE
!MESSAGE Possible choices  for configuration are:
!MESSAGE
!MESSAGE "tpccldr  - Win32 Release" (based on "Win32 (x86) Console Application")
!MESSAGE "tpccldr  - Win32 Debug" (based on "Win32 (x86) Console Application")
!MESSAGE
!ERROR An invalid configuration is specified.
!ENDIF

!IF "$(OS)" == "Windows_NT"
NULL=
!ELSE
NULL=nul
!ENDIF
################################################################################
# Begin Project
# PROP Target_Last_Scanned "tpccldr   - Win32 Debug"
RSC=rc.exe
CPP=cl.exe

!IF  "$(CFG)" == "tpccldr  - Win32 Release"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir "bin"
# PROP Interme diate_Dir "objects"
# PROP Target_Dir ""
OUTDIR=.\bin
INTDIR=.\objects

ALL : "$(OUTDIR) \tpccldr.exe"

CLEAN :
              -@erase "$(INTDIR) \getargs.obj"
              -@erase "$(INTDIR) \random.obj"
              -@erase "$(INTDIR) \strings.obj"
              -@erase "$(INTDIR) \time.obj"
              -@erase "$(INTD IR)\tpccldr.obj"
              -@erase "$(OUTDIR) \tpccldr.exe"

"$(OUTDIR)" :
    if not exist "$(OUTDIR)/$(NULL)" mkdir "$(OUTDIR)"

"$(INTDIR)" :
    if not exist "$(INTDIR)/$(NULL)" mkdir "$(INTDIR)"

# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_CO   NSOLE" /YX /c
# ADD CPP /nologo /MT /W3 /GX /O2 /I "c:  \mssql\dblib\include" /D "NDEBUG" /D
"WIN32" /D "_CONSOLE" /D "DBNTWIN32" /c
# SUBTRACT CPP /YX
CPP_PROJ=/nologo /MT /W3 /GX /O2 /I "c:  \mssql\dblib\include" /D "NDEBUG" /D \
 "WIN32" /D "_CONSOLE" /D "DB NTWIN32" /Fo"$(INTDIR)/" /c
CPP_OBJS=.\objects/
CPP_SBRS=.\.
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
BSC32_FLAGS=/nologo /o"$(OUTDIR)/tpccldr.bsc"
BSC32_SBRS=  \

LINK32=link.exe
# 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 odbccp32.lib
/nologo /subsystem:console /machine:I386
# 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
uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none
/machine:I386
LINK32_FLAGS=c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib us er32.lib gdi32.lib \
 winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib    \
 uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none    \
 /machine:I386 /out:"$(OUTDIR)/tpccldr.exe"
LINK32_OBJS=  \
              "$(INTDIR) \getargs.obj"  \
              "$(INTDIR) \random.obj"  \
              "$(INTDIR) \strings.obj"  \
              "$(INTDIR) \time.obj"  \
              "$(INTDIR) \tpccldr.obj"

"$(OUTDIR) \tpccldr.exe" : "$(OUTDIR)" $(DEF_FILE) $(LINK32_OBJS)
    $(LINK32) @<<
  $(LINK32_FLAGS) $(LINK32_OBJS)
<<

!ELSEIF  "$(CFG)" == "tpccldr   - Win32 Debug"

# 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
# PROP Use_Debug_Libraries 1
# PROP Output_Dir "bin"
# PROP Intermediate_Dir  "objects"
# PROP Target_Dir ""
OUTDIR=.\bin
INTDIR=.\objects

ALL : "$(OUTDIR) \tpccldr.exe"

CLEAN :
              -@erase "$(INTDIR) \getargs.obj"
              -@erase "$(INTDIR) \random.obj"
              -@erase "$(INTDIR) \strings.obj"
              -@erase "$(INTDIR) \time.obj"
              -@erase "$(INTDIR) \tpccldr.obj"
              -@erase "$(INTDIR) \vc40.idb"
              -@erase "$(INTDIR) \vc40.pdb"
              -@erase "$(OUTDIR) \tpccldr.exe"

"$(OUTDIR)" :
    if not exist "$(OUTDIR)/$(NULL)" mkdir "$(OUTDIR)"

"$(INTDIR)" :
    if not exist "$(INTDIR)/$(NULL)" mkdir "$(INTDIR)"

# ADD BASE CPP  /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D "_CONSOLE"
/YX /c
# ADD CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /I "c:  \mssql\dblib\include" /D
"_DEBUG" /D "WIN32" /D "_CONSOLE" /D "DBNTWIN32" /c
# SUBTRACT CPP /YX
CPP_PROJ=/nologo /MTd /W3 /Gm /GX /Zi /  Od /I "c:\mssql\dblib\include" /D \
 "_DEBUG" /D "WIN32" /D "_CONSOLE" /D "DBNTWIN32" /Fo"$(INTDIR)/"    \
 /Fd"$(INTDIR)/" /c
CPP_OBJS=.\objects/
CPP_SBRS=.\.
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC3 2 /nologo
# ADD BSC32 /nologo
BSC32_FLAGS=/nologo /o"$(OUTDIR)/tpccldr.bsc"
BSC32_SBRS=  \

LINK32=link.exe
# 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 o    dbccp32.lib
/nologo /subsystem:console /debug /machine:I386
# 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
```

```
uuid.lib odbc32.lib odbccp32.lib /nologo /s  ubsystem:console /pdb:none /debug
/machine:I386
LINK32_FLAGS=c: \mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib gdi32.lib  \
 winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib    \
 uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem   :console /pdb:none /debug \
 /machine:I386 /out:"$(OUTDIR)/tpccldr.exe"
LINK32_OBJS=  \
              "$(INTDIR)\getargs.obj"  \
              "$(INTDIR)\random.obj"  \
              "$(INTDIR)\strings.obj"  \
              "$(INTDIR)\time.obj"  \
              "$(INTDIR)\tpccldr.obj"

"$(OUTDIR)\tpccldr.exe" : "$(OUTDIR)" $ (DEF_FILE) $(LINK32_OBJS)
    $(LINK32) @<<
  $(LINK32_FLAGS) $(LINK32_OBJS)
<<

!ENDIF

.c{$(CPP_OBJS)}.obj:
   $(CPP) $(CPP_PROJ) $<

.cpp{$(CPP_OBJS)}.obj:
   $(CPP) $(CPP_PROJ) $<

.cxx{$(CPP_OBJS)}.obj:
   $(CPP) $(CPP_PROJ) $<

.c{$(CPP_SBRS)} .sbr:
   $(CPP) $(CPP_PROJ) $<

.cpp{$(CPP_SBRS)}.sbr:
   $(CPP) $(CPP_PROJ) $<

.cxx{$(CPP_SBRS)}.sbr:
   $(CPP) $(CPP_PROJ) $<

################################################################################
# Begin Target

# Name "tpccldr  - Win32 Release"
# Name "tpccldr  - Win32 Debug"

!IF  "$(CFG)" == "tpccldr  - Win32 Release"

!ELSEIF  "$(CFG)" == "tpccldr  - Win32 Debug"

!ENDIF

################################################################################
# Begin Source File

SOURCE=.\src\random.c
DEP_CPP_RANDO= \
              ".\src\tpcc.h" \
              "\mssql\dblib\include\sqldb.h" \
              "\mssql\dblib\include\sqlfront.h" \


"$(INTDIR)\random.obj" : $(SOURCE) $(DEP_CPP_RANDO) "$(INTDIR)"
   $(CPP) $(CPP_PROJ) $(SOURCE)


# End Source File
######################## ######################################################
# Begin Source File

SOURCE=.\src\strings.c
DEP_CPP_STRIN= \
              ".\src\tpcc.h" \
              "\mssql\dblib\include\sqldb.h" \
              "\mssql\dblib\include\sqlfront.h" \


"$(INTDIR)\strings.obj" : $(SOURCE) $(DEP_CPP_STRIN)   "$(INTDIR)"
   $(CPP) $(CPP_PROJ) $(SOURCE)


# End Source File
################################################################################
# Begin Source File

SOURCE=.\src\time.c
DEP_CPP_TIME_= \
              ".\src\tpcc.h" \
              "\mssql\dblib\include\sqldb.h" \
              "\mssql\dblib\include\sqlfront.h" \


"$(INTDIR)\time.obj" : $(SOURCE) $(DEP_CPP_TIME_) "$(INTDIR)"
   $(CPP) $(CPP_PROJ) $(SOURCE)


# End Source File
################################################################################
# Begin Source File

SOURCE=.\src\tpccldr.c
DEP_CPP_TPCCL= \
              ".\src\tpcc.h" \
              "\mssql\dblib\include\sqldb.h" \
              "\mssql\dblib\include\sqlfront.h" \


"$(INTDIR)\tpccldr.obj" : $(SOURCE) $(DEP_CPP_TPCCL) "$(INTDIR)"
   $(CPP) $(CPP_PROJ) $(SOURCE)


# End Source File
############## ###############################################################
# Begin Source File

SOURCE=.\src\getargs.c
DEP_CPP_GETAR= \
              ".\src\tpcc.h" \
              "\mssql\dblib\include\sqldb.h" \
              "\mssql\dblib\include\sqlfront.h" \


"$(INTDIR)\getargs.obj" : $(SOURCE) $(DEP _CPP_GETAR) "$(INTDIR)"
   $(CPP) $(CPP_PROJ) $(SOURCE)


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

tpccldr.plg

```
<html>
<body>
<pre>
<h1>Build Log</h1>
<h3>
--------------- -----Configuration: tpccldr  - Win32 Release --------------------
</h3>
<h3>Command Lines</h3>
Creating temporary file "C: \DOCUME~1\jamiere\LOCALS~1\Temp\RSP19.tmp" with
contents
[
/nologo /MT /W3 /GX /O2 /D "NDEBUG" /D "WIN32" /D "_CONSOLE" /D "DBNTWIN32"
/Fo".\objects/" /Fd". \objects/" /FD /c
"D:\MSTPCC.440\SETUP\loader\src\getargs.c"
"D:\MSTPCC.440\SETUP\loader\src\random.c"
"D:\MSTPCC.440\SETUP\loader\src\strings.c"
"D:\MSTPCC.440\SETUP\loader\src\time.c"
"D:\MSTPCC.440\SETUP\loader\src\tpccldr.c"
]
Creating command line "cl.exe @C: \DOCUME~1\jamiere\LOCALS~1\Temp\RSP19.tmp"
Creating temporary file "C: \DOCUME~1\jamiere\LOCALS~1\Temp\RSP1A.tmp" with
contents
[
kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib advapi32.lib
shell32.lib ole32.lib ol eaut32.lib uuid.lib odbc32.lib odbccp32.lib odbcbcp.lib
/nologo /subsystem:console /pdb:none /machine:I386 /out:".   \bin/tpccldr.exe"
.\objects\getargs.obj
.\objects\random.obj
.\objects\strings.obj
.\objects\time.obj
.\objects\tpccldr.obj
]
Creating comman d line "link.exe @C: \DOCUME~1\jamiere\LOCALS~1\Temp\RSP1A.tmp"
<h3>Output Window</h3>
Compiling...
getargs.c
random.c
strings.c
time.c
tpccldr.c
Generating Code...
Linking...



<h3>Results</h3>
tpccldr.exe  - 0 error(s), 0 warning(s)
</pre>
</body>
</html>
```

getargs.c

```
//            File:                       GETARGS.C
//                                                      Microsoft TPC -C Kit Ver.
4.41
//                                                      Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//            Purpose:       Source file for command line processing


// Includes
#include "tpcc.h"

//====================================  ==============================
//
// Function name: GetArgsLoader
//
//=================================================================

void GetArgsLoader(int argc, char **argv, TPCCLDR_ARGS *pargs)
{
    int                     i;
    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;
    pargs->password                     =  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->log_path
              =  LOG_PATH;
              pargs->pack_size                          =  DEFLDPACKSIZE;
              pargs->starting_warehouse   =  DEF_STARTING_WAREHOUSE;
              pargs->build_index                                        =
BUILD_INDEX;
              pargs->index_order                                        =
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 '?':       /* Fall throught */
                                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;
                                break;

                case 'b':
                                pargs->batch = atol(ptr+2);
                                break;

                case 'W':
                                pargs->num_warehouses =
atol(ptr+2);
                                break;

                case 's':
                                pargs->starting_warehouse =
atol(ptr+2);
                                break;

                case 't':
                                {
                                        pargs-
>tables_all = FALSE;
                                        if
(strcmp(ptr+2,"item") == 0)
                pargs->table_item = TRUE;
                                        else if
(strcmp(ptr+2,"warehouse") == 0)
                pargs->table_warehouse = TRUE;
                                        else if
(strcmp(ptr+2,"customer") == 0)
                pargs->table_customer = TRUE;
                                        else if
(strcmp(ptr+2,"orders") == 0)
                pargs->table_orders = TR UE;
                                        else
                                        {
                printf("\nUnrecognized command");
                GetArgsLoaderUsage();
                                        exit(1);
                                        }
                                        break;
                                }
                        case 'f':
                                pargs->loader_res_file =
ptr+2;
                                break;
                        case 'L':
                                pargs->log_path = ptr+2;
                                break;
                        case 'p':
                                pargs->pack_size =
atol(ptr+2);
                                break;
                        case 'i':
                                pargs->build_index =
atol(ptr+2);
                                break;
                        case 'o':
                                pargs->index_order =
atol(ptr+2);
                                break;
                        case 'c':
                                pargs->scale_down =
atol(ptr+2);
                                break;
                        case 'd':
                                pargs->index_script_path =
ptr+2;
                                break;
                        default:
                        GetArgsLoaderUsage();
                        exit(-1);
                        break;
                }
        }

        /* check for required args */
        if (pargs ->num_warehouses == UNDEF )
        {
                printf("Number of Warehouses is required \n");
                exit(-2);
        }

        return;
}


//===============================================================
//
// Function name: GetArgsLoaderUsage
//
//=============================================================   ======

void GetArgsLoaderUsage()
{

#ifdef DEBUG
    printf("[%ld]DBG: Entering GetArgsLoaderUsage()  \n", (int)
GetCurrentThreadId());
#endif


    printf("TPCCLDR: \n\n");
                printf("Parameter
Default\n");
                 printf("-----------------------------------------------------------
--\n");
    printf(" -W Number of Warehouses to Load                    Required    \n");
    printf(" -S Server                                          %s   \n", SERVER);
    printf(" -U Username                                        %s   \n", USER);
    printf(" -P Password                                        %s   \n",
PASSWORD);
    printf(" -D Database                                        %s   \n",
DATABASE);
                printf("-b Batch Size                                       %ld   \n",
(long) BATCH);
                printf("-p TDS packet size                                  %ld   \n",
(long) DEFLDPACKSIZE);
                 printf("-f Loader Results Output Filename                   %s   \n",
LOADER_RES_FILE);
                printf("-s Starting Warehouse                               %ld   \n",
(long) DEF_STARTING_WAREHOUSE);
                printf("-i Build Option (data = 0, data and index = 1)      %ld   \n",
(long) BUILD_INDEX);
                 printf("-o Cluster Index B uild Order (before = 1, after = 0)  %ld  \n",
(long) INDEX_ORDER);
                printf("-c Build Scaled Database (normal = 0, tiny = 1)     %ld   \n",
(long) SCALE_DOWN);
                 printf("-d Index Script Path                                %s   \n",
INDEX_SCRIPT_PATH);
                printf("-t Table to Load                                    all
tables \n");
    printf("   [item|warehouse|customer|orders]  \n");
    printf("   Notes:  \n");
    printf("      - the '-t' parameter may be included multiple times to   \n");
    printf("       spe cify multiple tables to be loaded   \n");
    printf("      - 'item' loads ITEM table  \n");
    printf("      - 'warehouse' loads WAREHOUSE, DISTRICT, and STOCK tables    \n");
    printf("      - 'customer' loads CUSTOMER and HISTORY tables   \n");
    printf("      - 'orders' load NEW -ORDER, ORDERS, ORDER -LINE tables \n");

                printf("\nNote:  Command line switches are case sensitive.  \n");

    exit(0);
}
```

random.c

```
//              File:                       RANDOM.C
//                                                              Microsoft TPC -C Kit Ver.
4.41
//                                                              Copyright Microsoft, 1996,
1997, 199 8, 1999, 2000, 2001
//              Purpose:        Random number generation routines for database loader


// Includes
#include "tpcc.h"
#include "math.h"

// Defines
#define A               16807
#define M       2147483647
#define Q           127773      /* M div A */
#define R             2836      /* M mod A */
#define Thread              __declspec(thread)

// Globals
long            Thread Seed = 0;        /* thread local seed */

/*****************************************************************************
*                                                                            *
* random -                                                                   *
*       Implements a GOOD pseudo random number generator.  This generator    *
*       will/should? run the complete period before r  epeating.             *
*                                                                            *
* Copied from:                                                               *
*       Random Numbers Generators: Good Ones Are Hard to Find.                *
*       Communications of the ACM  - October 1988 Volume 31 Number 10        *
*                                                                            *
* Machine Dependencies:                                                      *
*       long must be 2 ^ 31  - 1 or greater.                                 *
*                                                                            *
*****************************************************************************/

/***************** ************************************************************
* seed - load the Seed value used in irand and drand.  Should be used before  *
*       first call to irand or drand.                                        *
********************************  *****************************************/

void seed(long val)
{

#ifdef DEBUG
    printf("[%ld]DBG: Entering seed()...  \n", (int) GetCurrentThreadId());
                printf("Old Seed %ld New Seed %ld \n",Seed, val);
#endif

    if ( val < 0 )
                 val = abs(val);

    Seed = val;

}


/*****************************************************************************
*                                                                            *
* irand - returns a 32 bit integer pseudo random number with a period of       *
```

```
*       1 to 2 ^ 32  - 1.                                                    *
*                                                                            *
* parameters:                                                                *
*       none.                                                                *
*                                                                            *
* returns:                                                                   *
*       32 bit integer  - defined as  long ( see above ).                    *
*                                                                            *
* side effects:                                                              *
*       seed get recomputed.                                                 *
*****************************************************************************/

long irand()
{
    register long    s;      /* copy of seed */
    register long    test;   /* test flag */
    register long    hi;     /* tmp value f  or speed */
    register long    lo;     /* tmp value for speed */

#ifdef DEBUG
    printf("[%ld]DBG: Entering irand()...  \n", (int) GetCurrentThreadId());
#endif

    s = Seed;
    hi = s / Q;
    lo = s % Q;

    test = A * lo  - R * hi;
    if ( test > 0  )
                        Seed = test;
    else
                        Seed = test + M;

    return( Seed );
}


/*****************************************************************************
*                                                                            *
* drand - returns a double  pseudo random number between 0.0 and 1.0.        *
*       See irand.                                                           *
*****************************************************************************/
double drand()
{

#ifdef DEBUG
    printf("[%l d]DBG: Entering drand()... \n", (int) GetCurrentThreadId());
#endif

    return( (double)irand() / 2147483647.0);
}


//===========================================================================
// Function   : RandomNumber
//
// Description:
//============= ====================================================
long RandomNumber(long lower, long upper)
{
    long rand_num;

#ifdef DEBUG
    printf("[%ld]DBG: Entering RandomNumber()...  \n", (int) GetCurrentThreadId());
#endif

            if ( upper == lower )       /* pgd 08-13-96 perf enhancement */
                        return lower;

            upper++;

    if ( upper <= lower )
                        rand_num = upper;
    else
                        rand_num = lower + irand() % (upper  - lower); /* pgd
08-13-96 perf enhancement */


#ifdef DEBUG
    printf("[%ld]DBG: RandomNumber between %ld   & %ld ==> %ld \n",
                                                    (int) GetCurrentThreadId(),
lower, upper, rand_num);
#endif

    return rand_num;
}


#if 0

//Orginal code pgd 08/13/96

long RandomNumber(long lower,
                                                        long upper)
{
    long rand_num;

#ifdef DEBUG
    printf("[%ld]DBG: Enteri ng RandomNumber()... \n", (int) GetCurrentThreadId());
#endif

            upper++;

    if ((upper <= lower))
                        rand_num = upper;
    else
                        rand_num = lower + irand() % ((upper > lower) ? upper
- lower : upper);


#ifdef DEBUG
    printf("[%ld]DBG: RandomNumber betw  een %ld & %ld ==> %ld \n",
                                                    (int) GetCurrentThreadId(),
lower, upper, rand_num);
#endif


    return rand_num;
}
#endif

//===========================================================================
// Function   : NURand
//
// Description:
//============= ====================================================
long NURand(int iConst,
            long x,
            long y,
            long C)
{
    long rand_num;

#ifdef DEBUG
    printf("[%ld]DBG: Entering NURand()...  \n", (int) GetCurrentThreadId());
#endif

    rand_num = (((RandomNumber(0,iConst) | RandomNumber(x,y)) + C) % (y   -x+1))+x;

#ifdef DEBUG
    printf("[%ld]DBG: NURand: num = %d  \n", (int) GetCurrentThreadId(), rand_num);
#endif

    return rand_num;
}
```

strings.c

```
//          File:                   STRINGS.C
//                                                  Microsoft TPC -C Kit Ver.
4.41
//                                                  Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//          Purpose:    Source file for database loader string functions


// Includes
#include "tpcc.h"
#include <string.h>
#include <ctype.h>

//=============================================  ======================

//
// Function name: MakeAddress
//
//===============================================================

void MakeAddress(char *street_1,
                                                        char *street_2,
                                                        char *city,
                                                        char *state,
                                                        char *zip)
{

#ifdef DEBUG
    printf("[%ld]DBG: Entering MakeAddress()  \n", (int) GetCurrentThreadId());
#endif

    MakeAlphaString (10, 20, ADDRESS_LEN, street_1);
    MakeAlphaString (10, 20, ADDRESS_LEN, street_2);
    MakeAlphaString (10, 20, ADDRESS_LEN, city);
    MakeAlph aString ( 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 >= 0) && (num < 1 000))
    {
                        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 y,
//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 cha racters".  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)
{
            int                     len;
            int                     i;
    char    cc = 'a';
            static      char chArray[] =
"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz";
            static      int         chArrayMax = 61;

#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
//
//==============================================================

int MakeOriginalAlphaString(int  x,

int  y,

            int  z,

char *str,

            int  percent)
{
    int                     len;
    int                     val;
    int                     start;

#ifdef DEBUG
    printf("[%ld]DBG: Entering MakeOriginalAlphaString()  \n", (int)
GetCurrentThreadId());
#endif

    // verify prercentage is valid
    if ((percent < 0) || (percent > 100))
    {
                        printf("MakeOrigianlAlp haString: Invalid
percentage: %d \n", percent);
                        exit(-1);
    }

    // verify string is at least 8 chars in length
    if ((x + y) <= 8)
    {
                        printf("MakeOriginalAlphaString: string length must be
>= 8\n");
                        exit(-1);
    }

    // Make Alpha String
    len = MakeAlphaString(x,y, z, str);

    val = RandomNumber(1,100);
    if (val <= percent)
    {
                        start = RandomNumber(0, len  - 8);
                        strncpy(str + start, "ORIGINAL", 8);
    }


#ifdef DEBUG
    printf("[%ld]DBG: MakeOriginalAlphaString: : %s  \n",
                                            (int) GetCurrentThreadId(), str);
#endif

    return strlen(str);
}


//==============================================================
//
// Function name: MakeNumberString
//
//=============================================================  =====
int MakeNumberString(int  x, int  y, int  z, char *str)
{
            char tmp[16];

            //MakeNumberString is always called MakeZipNumberString(16, 16, 16,
string)

            memset(str, '0', 16);
            itoa(RandomNumber(0, 99999999), tmp, 10);
            memcpy(str, tmp, strlen(tmp));

            itoa(RandomNumber(0, 99999999), tmp, 10);
            memcpy(str+8, tmp, strlen(tmp));

            str[16] = 0;

    return 16;
}


//==============================================================
//
// Function name: MakeZipNumberString
//
//==================== ==========================================
int MakeZipNumberString(int  x, int  y, int  z, char *str)
{
            char tmp[16];

            //MakeZipNumberString is always called MakeZipNumberString(9, 9, 9,
string)

            strcpy(str, "000011111");

            itoa(RandomNumber(0, 9 999), tmp, 10);
            memcpy(str, tmp, strlen(tmp));

    return 9;
}


//==============================================================
//
// Function name: InitString
//
//==============================================================
void InitString(char *str, int len)
{
#ifdef DEBUG
    printf("[%ld]DBG: Entering InitString()  \n", (int) GetCurrentThreadId());
#endif

            memset(str, ' ', len);
    str[len] = 0;
}


//==============================================================
// Function name: InitAddress
//
// Description:
//
//==============================================================

void InitAddress(char *street_1, char *street_2, char *city, char *state, char
*zip)
{
            memset(street_1, ' ', ADDRESS_LEN+1);
            memset(street_2, ' ', ADDRESS_LEN+1);
            memset(city, ' ', ADDRESS_LEN+1);

    street_1[ADDRESS_LEN+1] = 0;
    street_2[ADDRESS_LEN+1] = 0;
    city[ADDRESS_LEN+1]     = 0;

            memset(state, ' ', STATE_LEN+1);
    state[STATE_LEN+1] = 0;

            memset(zip, ' ', ZIP_LEN+1 );
    zip[ZIP_LEN+1] = 0;
}


//==============================================================
//
// Function name: PaddString
//
//==============================================================

void PaddString(int max, char *name)
{
            int                     len;

            len = strlen(name);
            if ( len < max )
                        memset(name+len, ' ', max  - len);
            name[max] = 0;

            return;
}
```

time.c

```
//          File:                   TIME.C
//                                                  Microsoft TPC-C Kit Ver.
4.41
//                                                  Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//          Purpose:    Source file for time functions


// Includes
#include "tpcc.h"

// Globals
static long start_sec;


//==============================================================
//
// Function name: TimeNow
//
//=================================================  ==============

long TimeNow()
{
   long                 time_now;
   struct     _timeb el_time;

#ifdef DEBUG
    printf("[%ld]DBG: Entering TimeNow()  \n", (int) GetCurrentThreadId());
#endif

   _ftime(&el_time);
```

```
    time_now = ((el_time.time  - start_sec) * 1000) + el_time .millitm;

    return time_now;
}
```

tpcc.h

```
//            File:                         TPCC.H
//                                                      Microsoft TPC -C Kit Ver.
4.41
//                                                      Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//            Purpose:       Header file for TPC -C database loader


// Build number of TPC Benchmark Kit
#define TPCKIT_VER          "4.41"

// General headers
#include <windows.h>
#include <winbase.h>
#include <stdlib.h>
#include <stdio.h>
#include <process.h>
#include <stddef.h>
#include <stdarg.h>
#include <string.h>
#include <time.h>
#include <sys \timeb.h>
#include <sys \types.h>

// ODBC headers
#include <sql.h>
#include <sqlext.h>
#include <odbcss.h>

// General constants
#define MILLI                                 1000
#define FALSE                                         0
#define TRUE                                          1
#define UNDEF                                                                 -1
#define MINPRINTASCII                                   32
#define MAXPRINTASCII                                  126

// Default environment constants
#define SERVER                                        ""
#define DATABASE                                      "tpcc"
#define USER                                          "sa"
#define PASSWORD                                "

// Default loader arguments
#define BATCH                                 10000
#define DEFLDPACKSIZE                                 32768
#define LOADER_RES_FILE
"C: \\MSTPCC.440 \\SETUP \\logs \\load.out"
#define LOG_PATH                                "C: \\MSTPCC.440 \\SETUP \\LOGS \\";
#define LOADER_NURAND_C                                 123
#define DEF_STARTING_WAREHOUSE                        1
#define BUILD_INDEX
            1             // build both dat a and indexes
#define INDEX_ORDER
            1             // build indexes before load
#define SCALE_DOWN
            0   // build a normal scale database
#define INDEX_SCRIPT_PATH    "scripts"

typedef struct
{
    char                                              *server;
    char                                              *database;
    char                                              *user;
    char                                              *password;
            BOOL                                                          tables_all;
                        // set if loading all tables
            BOOL                                                          table_item;
                        // set if loading ITEM table specifically
            BOOL
            table_warehouse;            // set if loading WAREHOUSE, DISTRICT,
and STOCK
            BOOL
            table_customer;                           // set if loading  CUSTOMER
and HISTORY
            BOOL                                                          table_orders;
            // set if loading NEW -ORDER, ORDERS, ORDER -LINE
    long                                                  num_warehouses;
    long                                                  batch;
    long                                                  verbose;
            long                                                          pack_size;
            char
            *loader_res_file;
            char                                                          *log_path;
            char
            *synch_servername;
            long
            case_sensitivity;
            long
            starting_warehouse;
            long                                                          build_index;
            long                                                          index_order;
            long                                                          scale_down;
            char
            *index_script_path;
} TPCCLDR_ARGS;

// String length constants
            #define SERVER_NAME_LEN             20
            #define DATABASE_NAME_LEN           20
            #define USER_NAME_LEN               20
            #define PASSWORD_LEN                20
            #define TABLE_NAME_LEN              20
            #define I_DATA_LEN                  50
            #define I_NAME_LEN                  24
            #define BRAND_LEN                    1
            #define LAST_NAME_LEN               16
            #define W_NAME_LEN                  10
            #define ADDRESS_LEN                 20
            #define STATE_LEN                    2
            #define ZIP_LEN                      9
            #define S_DIST_LEN                  24
            #define S_DATA_LEN                  50
            #define D_NAME_LEN                  10
            #define FIRST_NAME_LEN              16
            #define MIDDLE_NAME_LEN              2
            #define PHONE_LEN                   16
            #define CREDIT_LEN                   2
            #define C_DATA_LEN                 500
            #define H_DATA_LEN                  24
            #define DIST_INFO_LEN               24
            #define MAX_OL_NEW_ORDER_ITEMS      15
            #define MAX_OL_ORDER_STATUS_ITEMS   15
            #define STATUS_LEN                  25
            #define OL_DIST_INFO_LEN                        24
            #define C_SINCE_ LEN
23
            #define H_DATE_LEN
23
            #define OL_DELIVERY_D_LEN                       23
            #define O_ENTRY_D_LEN               23


// Functions in random.c
void          seed();
long          irand();
double        drand();
void          WUCreate();
short         WURand();
long          RandomNumber(long lower, lo ng upper);

// Functions in getargs.c;
void          GetArgsLoader();
void          GetArgsLoaderUsage();

// Functions in time.c
long          TimeNow();

// Functions in strings.c
void          MakeAddress();
void          LastName();
int           MakeAlphaString();
int           MakeOriginalAlphaString();
int           MakeNumberString();
int           MakeZipNumberString();
void          InitString();
void          InitAddress();
void          PaddString();
```

tpccldr.c

```
//            File:                         TPCCLDR.C
//                                                      Microsoft TPC -C Kit Ver.
4.41
//                                                      Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//            Purpose:       Source file for TPC -C database loader


// Includes
#include "tpcc.h"
#include "search.h"

// Defines
#define MAXITEMS                100000
#define MAXITEMS_SCALE_DOWN                 100
#define CUSTOMERS_PER_DISTRICT  3000
#define CUSTOMERS_SCALE_DOWN                30
#define DISTR ICT_PER_WAREHOUSE  10
#define ORDERS_PER_DISTRICT     3000
#define ORDERS_SCALE_DOWN       30
#define MAX_CUSTOMER_THREADS    2
#define MAX_ORDER_THREADS       3
#define MAX_MAIN_THREADS        4

// Functions declarations

void HandleErrorDBC (SQLHDBC  hd  bc1);

void CheckDataBase();

long NURand();
void LoadItem();
void LoadWarehouse();

void Stock();
void District();

void LoadCustomer();
void CustomerBufInit();
void CustomerBufLoad();
void LoadCustomerTable();
void LoadHistoryTable();

void LoadOrders();
void OrdersBufInit();
void OrdersBufLoad();
void LoadOrdersTable();
void LoadNewOrderTable();
void LoadOrderLineTable();
void GetPermutation();
void CheckForCommit();
void OpenConnections();
void BuildIndex();
void FormatDate ();

// Shared memory structu res

typedef struct
{
    long                ol;
    long                ol_i_id;
    short               ol_supply_w_id;
    short               ol_quantity;
    double              ol_amount;
    char                ol_dist_info[DIST_INFO_LEN+1];
            char
            ol_delivery_d[OL_DELIVERY_D_LEN+1];
} ORDER_LINE_STRUCT;

typedef struct
{
    long                o_id;
    short               o_d_id;
    short               o_w_id;
    long                o_c_id;
    short               o_carrier_id;
```

```
    short               o_ol_cnt;
    short               o_all_local;
            ORDER_LINE_STRUCT   o_ol[15];
} ORDERS_STRUCT;

typedef struct
{
    long                                        c_id;
    short                                       c_d_id;
    short                                       c_w_id;
            char
            c_first[FIRST_NAME_LEN+1];
    char
            c_middle[MIDDLE_NAME_LEN+1];
    char                                        c_last[LAST_NAME_LEN+1];
    char                                        c_street_1[ADDRESS_LEN+1];
    char                                        c_street_2[ADDRESS_LEN+1];
    char                                        c_city[ADDRESS_LEN+1];
    char                                        c_state[STATE_LEN+1];
    char                                        c_zip[ZIP_LEN+1];
    char                                        c_phone[PHONE_LEN+1];
    char                                        c_credit[CREDIT_LEN+1];
    double                                      c_credit_lim;
    double                                      c_discount;
//  fix to avoid ODBC float to numeric conversion problem.
//  double                                      c_balance;
            char                                        c_balance[6];

    double                                      c_ytd_payment;
            short
            c_payment_cnt;
            short
            c_delivery_cnt;
            char
            c_data[C_DATA_LEN+1];
            double                                      h_amount;
    char                                        h_data[H_DATA_LEN+1];
} CUSTOMER_STRUCT;

typedef struct
{
            char
            c_last[LAST_NAME_LEN+1];
            char
            c_first[FIRST_NAME_LEN+1];
    long                                        c_id;
} CUSTOMER_SORT_STRUCT;

typedef struct
{
    long                time_start;
} LOADER_TIME_STRUCT;


// Global variables

char            szLastError[300];

HENV            henv;

HDBC            v_hdbc;
                // for SQL Server version verification
HDBC            i_hdbc1;
                // for ITEM table
HDBC            w_hdbc1;
                // for WAREHOUSE, DISTRICT, STOCK
HDBC            c_hdbc1;
                // for CUSTOMER
HDBC            c_hdbc2;
                // for HISTORY
HDBC            o_hdbc1;
                // for ORDERS
HDBC            o_hdbc2;
                // for NEW-ORDER
HDBC            o_hdbc3;
                // for ORDER-LINE

HSTMT           v_hstmt;
                // for SQL Server version verification
HSTMT           i_hstmt1;
HSTMT           w_hstmt1;
HSTMT           c_hstmt1, c_hstmt2;
HSTMT           o_hstmt1, o_hstmt2, o_hstmt3;

ORDERS_STRUCT   orders_buf[ORDERS_ PER_DISTRICT];
CUSTOMER_STRUCT customer_buf[CUSTOMERS_PER_DISTRICT];
long            orders_rows_loaded;
long            new_order_rows_loaded;
long            order_line_rows_loaded;
long            history_rows_loaded;
long            customer_rows_loade d;
long            stock_rows_loaded;
long            district_rows_loaded;
long            item_rows_loaded;
long            warehouse_rows_loaded;
long            main_time_start;
long            main_time_end;
long                                        max_items;
long                                        customers_per_dist rict;
long                                        orders_per_district;
long                                        first_new_order;
long                                        last_new_order;

TPCCLDR_ARGS    *aptr, args;

//==============================================================
//
// Function name: main
//
//====================================  ==============================

int main(int  argc, char **argv)
{

            DWORD           dwThreadID[MAX_MAIN_THREADS];
            HANDLE          hThread[MAX_MAIN_THREADS];
            FILE            *fLoader;
            char            buffer[255];
            int                                                 i;

            for (i=0; i<MAX_MAIN_THR EADS; i++)
                        hThread[i] = 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
            //CheckDat aBase();


            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_dist rict = 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 fil e 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 par allel 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. \n");
                                    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. \n");
                                    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,

                          0,

                          &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;
    char                    i_name[I_NAME_LEN+1];
    double                  i_price;
    char                    i_data[I_DATA_LEN+1];
                char                    name[20];
                long                    time_start;
                RETCODE                 rc;
                DBINT                   rcint;
                char                    bcphint[128];
                char                    err_log_path[256];

                // 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);
                strcpy(err_log_path,aptr ->log_path);
                strcat(err_log_path,"item.err");
                rc = bcp_init(i_hdbc1, name, NULL, err_log_path , DB_IN);
                if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

                if ((aptr->build_index == 1) && (aptr ->index_order == 1))
                {
                        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);
                if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

                rc = bcp_bind(i_hdbc1, (BYTE *) &i_im_id, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT4, 2);
                if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

                rc = bcp_bind(i_hdbc1, (BYTE *) i_name, 0, I_NAME_LEN, NULL, 0, 0,
3);
                if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

                rc = bcp_bind(i_hdbc1, (BYTE *) &i_price, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 4);
                if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

                rc = bcp_bind(i_hdbc1, (BYTE *) i_data, 0, I_DATA_LEN, NULL, 0, 0,
5);
                if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

                time_start = (TimeNow() / MILLI);

                item_rows_loaded = 0;

                for (i_id = 1; i_id <= 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);

                        item_rows_loaded++;
                        CheckForCommit(i_hdbc1, i_hstmt1, item_rows_lo  aded,
"item", &time_start);
                }

                rcint = bcp_done(i_hdbc1);
                if (rcint < 0)
                        HandleErrorDBC(i_hdbc1);

                printf("Finished loading item table.  \n");

                SQLFreeStmt(i_hstmt1, SQL_DROP);
                SQLDisconnect(i_hdbc1);
                SQLFreeConnect(i_hdbc1);

                // if build  index after load
                if ((aptr->build_index == 1) && (aptr ->index_order == 0))
                        BuildIndex("idxitmcl");

}


//=========================================================================
//
// Function   : LoadWarehouse
//
// Loads WAREHOUSE table and loa ds Stock and District as Warehouses are created
//
//=========================================================================

void LoadWarehouse()
{
    short     w_id;
    char      w_name[W_NAME_LEN+1];
    char      w_street_1[ADDRESS_LEN+1];
    char      w_street_2[ADDRESS_LEN+1];
    char      w_city[ADDRESS_LEN+1];
    char      w_state[STATE_LEN+1];
    char      w_zip[ZIP_LEN+1];
    double    w_tax;
    double    w_ytd;
                char          name[20];
                long          time_start;
                RETCODE       rc;
                DBINT         rcint;
                char          bcphint[128];
                char          err_log_path[256];

                // Seed with unique number
                seed(2);

                printf("Loading warehouse table...  \n");

                // if build index before load...
                if ((aptr->build_index == 1) && (aptr ->index_order == 1))
                        BuildIndex("idxwarcl");

                InitString(w_name, W_NAME_LEN+1);
                InitAddress(w_stree t_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);
                strcpy(err_log_path,aptr ->log_path);
                strcat(err_log_path,"whouse.err");
                rc = bcp_init(w_hdbc1, name, NULL, err_log_path, DB_IN);
                if (rc != SUCCEED)
                        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*) bcphint);
                        if (rc != SUCCEED)
```

```
                                HandleErrorDBC(w_hdbc1);
        }

        rc = bcp_bind(w_hdbc1, (BYTE *) &w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 1);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);

        rc = bcp_bind(w_hdbc1,  (BYTE *) w_name, 0, W_NAME_LEN, NULL, 0, 0,
2);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);

        rc = bcp_bind(w_hdbc1, (BYTE *) w_street_1, 0, ADDRESS_LEN, NULL, 0,
0, 3);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);

        rc = bcp_bind(w_hdbc1, (BYTE *)  w_street_2, 0, ADDRESS_LEN, NULL, 0,
0, 4);
        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);

        rc = bcp_bind(w_hdbc1, (BYTE *) w_state,  0, STATE_LEN, NULL, 0, 0,
6);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);

        rc = bcp_bind(w_hdbc1, (BYTE *) w_zip, 0, ZIP_LEN, NULL, 0, 0, 7);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);

        rc = bcp_bind(w_hdbc1, (BYTE *) &w_tax, 0, SQL_VARLEN_DATA  , NULL, 0,
SQLFLT8, 8);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);

        rc = bcp_bind(w_hdbc1, (BYTE *) &w_ytd, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 9);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);

        time_start = (TimeNow() / MILLI);

        warehouse_rows_loaded = 0;

        for (w_id = (short)aptr ->starting_warehouse; w_id <= aptr  -
>num_warehouses; w_id++)
        {
                MakeAlphaString(6,10, W_NAME_LEN, w_name);

                MakeAddress(w_street_1, w_street_2, w_city, w_state,
w_zip);

                w_tax = ((float) RandomNumber(0L,2000L)  )/10000.00;

                w_ytd = 300000.00;

                rc = bcp_sendrow(w_hdbc1);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                warehouse_rows_loaded++;
                CheckForCommit(w_hdbc1, i_hstmt1,
warehouse_rows_loaded, "warehouse", &time_start);
        }

        rcint = bcp_done(w_hdbc 1);
        if (rcint < 0)
                HandleErrorDBC(w_hdbc1);

        printf("Finished loading warehouse table.  \n");

        // if build index after load...
        if ((aptr->build_index == 1) && (aptr ->index_order == 0))
                BuildIndex("idxwarcl");

        stock_rows_loaded = 0;
        district_rows_loaded = 0;
        District();
        Stock();

}


//================================================================
//
// Function   : District
//
//================================================================

void District()
{
    short     d_id;
    short     d_w_id;
    char      d_name[D_NAME_LEN+1];
    char      d_street_1[ADDRESS_LEN+1];
    char      d_street_2[ADDRESS_LEN+1];
    char      d_city[ADDRESS_LEN+1];
    char      d_state[STATE_LEN+1];
    char      d_zip[ZIP_LEN+1];
    double    d_tax;
    double    d_ytd;
              char          name[20];
    long      d_next_o_id;
              long          time_start;
              int                       w_id;
              RETCODE       rc;
              DBINT         rcint;
              char          bcphint[128];
              char          err_log_path[256];

              // Seed with unique number
              seed(4);

              printf("Loading district table...  \n");

              // build index before load
              if ((aptr->build_index == 1) && (aptr ->index_order == 1))
                        BuildIndex("idxdiscl");

              InitString(d_name, D_NAME_LEN+1);
              InitAddress(d_street_1, d_street_2, d_city, d_state, d_zip);
              sprintf(name, "%s..%s", aptr ->database, "district");

              //rc = bcp_init(w_hdbc1 , name, NULL, "logs \\district.err", DB_IN);
              strcpy(err_log_path,aptr ->log_path);
              strcat(err_log_path,"district.err");
              rc = bcp_init(w_hdbc1, name, NULL, err_log_path, DB_IN);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              if ((aptr->build_index == 1)  && (aptr->index_order == 1))
              {
                        sprintf(bcphint, "tablock, order (d_w_id, d_id),
ROWS_PER_BATCH = %u", (aptr ->num_warehouses * 10));
                        rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                  HandleErrorDBC(w_hdbc1);
              }

              rc = bcp_bind(w_hdbc1, (BYTE *) &d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 1);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) &d_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) d_name, 0, D_NAME_LEN, NULL, 0, 0,
3);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) d_street_1, 0, ADDRESS_LEN, NULL, 0,
0, 4);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) d_street_2, 0, ADDRESS_LEN, NULL, 0,
0, 5);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) d_city, 0, ADDRESS_LEN, NULL, 0, 0,
6);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_ hdbc1, (BYTE *) d_state, 0, STATE_LEN, NULL, 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)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) &d _tax, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 9);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) &d_ytd, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 10);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (B YTE *) &d_next_o_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT4, 11);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              d_ytd  = 30000.0;

              d_next_o_id = orders_per_district+1;

              time_start = (TimeNow() / MILLI);

              for (w_id = aptr ->starting_warehouse; w_id <= a ptr->num_warehouses;
w_id++)
              {
                        d_w_id = w_id;

                        for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE; d_id++)
                        {
                                  MakeAlphaString(6,10,D_NAME_LEN,
d_name);

                                  MakeAddress(d_street_1, d_street_2,
d_city, d_state, d_zip);

                                  d_tax = ((float)
RandomNumber(0L,2000L))/10000.00;

                                  rc = bcp_sendrow(w_hdbc1);
                                  if (rc != SUCCEED)
                                            HandleErrorDBC(w_hdbc1);

                                  district_rows_loaded++;
                                  CheckForCommit(w_hdbc1, w_hstmt1,
district_rows_loaded, "district", &time_start);
                        }
    }

              rcint = bcp_done(w_h dbc1);
              if (rcint < 0)
                        HandleErrorDBC(w_hdbc1);

              printf("Finished loading district table.  \n");

              // if build index after load...
              if ((aptr->build_index == 1) && (aptr ->index_order == 0))
                        BuildIndex("idxdiscl");

    return;
}


//================ ==================================================
//
// Function   : Stock
//
```

```
//===============================================================

void Stock()
{
    long      s_i_id;
    short     s_w_id;
    short     s_quantity;
    char      s_dist_01[S_DIST_ LEN+1];
    char      s_dist_02[S_DIST_LEN+1];
    char      s_dist_03[S_DIST_LEN+1];
    char      s_dist_04[S_DIST_LEN+1];
    char      s_dist_05[S_DIST_LEN+1];
    char      s_dist_06[S_DIST_LEN+1];
    char      s_dist_07[S_DIST_LEN+1];
    char      s_dist_08[S_DIST_LEN+1];
    char      s_dist_09[S_DIST_LEN+1];
    char      s_dist_10[S_DIST_LEN+1];
    long      s_ytd;
    short     s_order_cnt;
    short     s_remote_cnt;
    char      s_data[S_DATA_LEN+1];
    short     len;
              char          name[20];
              long          time_start;
              RETCODE       rc;
              DBINT         rcint;
              char          bcphint[128];
              char          err_log_path[256];

              // Seed with unique number
              seed(3);

              // if build index before load...
              if ((aptr->build_index == 1) && (aptr ->index_order == 1))
                        BuildIndex("idxstkcl");

              sprintf(name, "%s..%s", aptr ->database, "stock");

              //rc = bcp_init( w_hdbc1, name, NULL, "logs \\stock.err", DB_IN);
              strcpy(err_log_path,aptr ->log_path);
              strcat(err_log_path,"stock.err");
              rc = bcp_init(w_hdbc1, name, NULL, err_log_path, DB_IN);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              if ((aptr->build_index ==  1) && (aptr->index_order == 1))
              {
                        sprintf(bcphint, "tablock, order (s_i_id, s_w_id),
ROWS_PER_BATCH = %u", (aptr ->num_warehouses * 100000));
                        rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCED)
                                  HandleErrorDBC(w_hdbc1);
              }

             rc = bcp_bind(w_hdbc1, (BYTE *) &s_i_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              bcp_bind(w_hdbc1, (BYTE *) &s_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc 1);

              rc = bcp_bind(w_hdbc1, (BYTE *) &s_quantity, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 3);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_01, 0, S_DIST_LEN, NULL, 0, 0,
4);
              if (rc != SUCCEED)
                        HandleErrorDBC(w _hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_02, 0, S_DIST_LEN, NULL, 0, 0,
5);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_03, 0, S_DIST_LEN, NULL, 0, 0,
6);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_04, 0, S_DIST_LEN, NULL, 0, 0,
7);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_05, 0, S_DIST_LEN, NULL, 0, 0,
8);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_06, 0, S_DIST_LEN, NULL, 0, 0,
9);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_07, 0, S_DIST_LEN, NULL, 0, 0,
10);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_08, 0, S_DIST_LEN, NULL, 0, 0,
11);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_09, 0, S_DIST_LEN, NULL, 0, 0,
12);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hd bc1, (BYTE *) s_dist_10, 0, S_DIST_LEN, NULL, 0, 0,
13);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) &s_ytd, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 14);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_ hdbc1, (BYTE *) &s_order_cnt, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 15);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) &s_remote_cnt, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 16);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdb c1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_data, 0, S_DATA_LEN, NULL, 0, 0,
17);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              s_ytd = s_order_cnt = s_remote_cnt = 0;

              time_start = (TimeNow() / MILLI);

              printf("...Loading stock table \n");

              for (s_i_id=1; s_i_id <= max_items; s_i_id++)
              {

                        for (s_w_id = (short)aptr ->starting_warehouse; s_w_id
<= aptr->num_warehouses; s_w_id++)
                        {

                                  s_quantity =
(short)RandomNumber(10L,100L);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_01);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_02);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
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 = MakeOriginal AlphaString(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];
              char                                        name[20];
              RETCODE
              rc;
              DBINT
              rcint;
              char
              bcphint[128];
              char
              cmd[256];
              int
              num_procs;
              char
              err_log_path_cust[256];
              char
              err_log_path_hist[256];
              // 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");
		// check the number of processors on this system
		// if 8 or more processors, then build index on
History.
		// if less than 8 processors, do not build the index
		num_procs = atoi(getenv( "NUMBER_OF_PROCESSORS" ));
		if ( num_procs >= 8 )
			BuildIndex("idxhiscl");
	}

	// Initialize bulk copy
	sprintf(name, "%s..%s", aptr ->database, "customer");

	//rc = bcp_init(c_hdbc1, name, NULL, "logs  \\customer.err", DB_IN);
	strcpy(err_log_path_cust,aptr ->log_path);
	strcat(err_log_path_cust,"customer.err");
	rc = bcp_init(c_hdbc1, name, NULL, err_log_path_cust, 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);
	strcpy(err_log_path_hist,aptr ->log_path);
	strcat(err_log_path_hist,"history.err");
	rc = bcp_init(c_hdbc2, name, NULL, err_log_path_hist, 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 = %d, w_id = %d \n", d_id, w_id);

			hThread[0] = CreateThread(NULL,

			  0,

			  (LPTHREAD_START_ROUTINE)
LoadCustomerTable,

			  &customer_time_start,

			  0,

			  &dwThreadID[0]);

			if (hThread[0] == NULL)
			{
				printf("Error, failed in
creating creating thread = 0. \n");
				exit(-1);
			}

			// Start History table thread

			printf("...Loading history table for:
d_id = %d, w_id = %d \n", d_id, w_id);

			hThread[1] = CreateThread(NULL,

			  0,

			  (LPTHREAD_START_ ROUTINE)
LoadHistoryTable,

			  &history_time_start,

			  0,

			  &dwThreadID[1]);

			if (hThread[1] == NULL)
			{
				printf("Error, failed in
creating creating thread = 1. \n");
				exit(-1);
			}

			WaitForSingleObject( hThread[0],
INFINITE );
			WaitForSingleObject( hThread[1],
INFINITE );

			if (CloseHandle(hThread[0]) == FALSE)
			{
				printf("Error, failed in
closing customer thread handle with errno: %d  \n", GetLastError ());
			}

			if (CloseHandle(hThread[1]) == FALSE)
			{
				printf("Error, failed in
closing history thread handle with errno: %d  \n", GetLastError());
			}


		}

	}

	// flush the bulk connection
	rcint = bcp_done(c_hdbc1);
	if (rcint < 0)
		HandleError DBC(c_hdbc1);

	rcint = bcp_done(c_hdbc2);
	if (rcint < 0)
		HandleErrorDBC(c_hdbc2);

	printf("Finished loading customer table.  \n");

	// if build index after load...
	if ((aptr->build_index == 1) && (aptr ->index_order == 0))
	{
		BuildIndex("id xcuscl");
		// check the number of processors on this system
		// if 8 or more processors, then build index on
History.
		// if less than 8 processors, do not build the index
		num_procs = atoi(getenv( "NUMBER_OF_PROCESSORS" ));
		if (num_procs >= 8)
			BuildIndex("idxhiscl");
	}

	// build non-clustered index
	if (aptr->build_index == 1)
		BuildIndex("idxcusnc");

	// Output the NURAND used for the loader into C_FIRST for C_ID = 1,
	// C_W_ID = 1, and C_D_ID = 1
	//sprintf(cmd, "osql  -S%s -U%s -P%s -d%s -e -Q\"update customer set
c_first = 'C_LOAD = %d' where c_id = 1 and c_w_id = 1 and c_d_id = 1   \" >
logs\\nurand_load.log",
		sprintf(cmd, "osql  -S%s -U%s -P%s -d%s -e -Q\"update customer set
c_first = 'C_LOAD = %d' where c_id = 1 and c_w_id = 1 and c_d_id =    1\"
> %snurand_load.log",
							aptr->server,
							aptr->user,
							aptr->password,
							aptr->database,
							LOADER_NURAND_C,
							aptr->log_path);

		system(cmd);

		SQLFreeStmt(c_hstmt1, SQL_DROP);
		SQLDisconnect(c_hdbc1);
		SQLFreeConnect(c_hdbc1);

		SQLFreeStmt(c_hstmt2, SQL_DROP);
		SQLDisconnect(c_hdbc2);
		SQLFreeConnect(c_hdbc2);


    return;

}


//==============================================================
//
// Function   : CustomerBufInit
//
//=======================================  ========================

void CustomerBufInit()
{
		int     i;

		for (i=0;i<customers_per_district;i++)
		{
			customer_buf[i].c_id = 0;
			customer_buf[i].c_d_id = 0;
			customer_buf[i].c_w_id = 0;

			strcpy(custo mer_buf[i].c_first,"");
			strcpy(customer_buf[i].c_middle,"");
			strcpy(customer_buf[i].c_last,"");
			strcpy(customer_buf[i].c_street_1,"");
			strcpy(customer_buf[i].c_street_2,"");
			strcpy(customer_buf[i].c_city,"");
			strcpy(customer_buf[i].c_state,"");
			strcpy(customer_buf[i].c_zip,"");
			strcpy(customer_buf[i].c_phone,"");
			strcpy(customer_buf[i].c_credit,"");

			customer_buf[i].c_credit_lim = 0;
			customer_buf[i].c_discount = (float) 0;

			//  fix to avoid ODBC float to numeric conversion
problem.
			//            customer_buf[i].c_balance = 0;
			strcpy(customer_buf[i].c_balance,"");

			customer_buf[i].c_ytd_payment = 0;
			customer_buf[i].c_payment_cnt = 0;
			customer_buf[i].c_delivery_cnt = 0;

			strcpy(customer_buf[i].c_data,"");

			customer_buf[i]. h_amount = 0;

			strcpy(customer_buf[i].h_data,"");

		}



}


//==============================================================
//
// Function   : CustomerBufLoad
//
// Fills shared buffer for HISTORY and CUSTOMER
//================ ================================================
```

```
void CustomerBufLoad(int d_id, int w_id)
{
        long                                                    i;
    CUSTOMER_SORT_STRUCT    c[CUSTOMERS_PER_DISTRICT];


        for (i=0;i<customers_per_district;i++)
        {
                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);

                c[i].c_id = i+1;

        }

        printf("...Loading customer buffer for: d_id = %d, w_id = %d   \n",
                        d_id, w_id);

        for (i=0;i<customers_per_district;i++)
        {

                customer_buf[i].c_d_id = d_id;
                customer_buf[i].c_w_id = w_id;
                customer_buf[i].h_amount = 10.0;

                customer_buf[i].c_ytd_payment  = 10.0;

                customer_buf[i].c_payment_cnt  = 1;
                customer_buf [i].c_delivery_cnt = 0;

                // Generate CUSTOMER and HISTORY data

                customer_buf[i].c_id = c[i].c_id;

                strcpy(customer_buf[i].c_first, c[i].c_first);
                strcpy(customer_buf[i].c_last, c[i].c_last);

                customer_buf[i].c_middle[0] = 'O' ;
                customer_buf[i].c_middle[1] = 'E';

                MakeAddress(customer_buf[i].c_street_1,

customer_buf[i].c_street_2,
                                                        customer_buf[i].c_city,
                                                       customer_buf[i].c_state,
                                                        customer_buf[i].c_zip);

                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) RandomNumber(0L,
5000L)) / 10000.0;

                //  fix to avoid ODBC float to numeric conversion
problem.
                //  customer_buf[i].c_balance =   -10.0;
                strcpy(customer_buf[i].c_balance," -10.0");

                MakeAlphaString(300, 500, C_DAT A_LEN,
customer_buf[i].c_data);

                // Generate HISTORY data
                MakeAlphaString(12, 24, H_DATA_LEN,
customer_buf[i].h_data);

        }
}

//===============================================================
//
// Function   : LoadCustomerTable
//
//===============================================================

void LoadCustomerTable(LOADER_TIME_STRUCT *customer_time_start)
{
        int         i;
    long        c_id;
    short       c_d_id;
    short       c_w_id;
    char        c_first[FIRS T_NAME_LEN+1];
    char        c_middle[MIDDLE_NAME_LEN+1];
    char        c_last[LAST_NAME_LEN+1];
    char        c_street_1[ADDRESS_LEN+1];
    char        c_street_2[ADDRESS_LEN+1];
    char        c_city[ADDRESS_LEN+1];
    char        c_state[STATE_ LEN+1];
    char        c_zip[ZIP_LEN+1];
    char        c_phone[PHONE_LEN+1];
    char        c_credit[CREDIT_LEN+1];
    double      c_credit_lim;
    double      c_discount;

        //  fix to avoid ODBC float to numeric conversion problem.

        //  double                  c_balance;
        char                        c_balance[6];

    double      c_ytd_payment;
    short       c_payment_cnt;
    short       c_delivery_cnt;
    char        c_data[C_DATA_LEN+1];
        char                        c_since[C_SINCE_LEN+1];
        RETCODE                     rc;

    rc = bcp_bind(c_hdbc1, (BYTE *) &  c_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
1);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
2);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

       rc = bcp_bind(c_hdbc1,  (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_first, 0, FIRST_NAME_LEN, NULL, 0, 0, 4);
        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)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_last, 0, LAST_NAME_LEN, NULL, 0, 0, 6);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bin d(c_hdbc1, (BYTE *) c_street_1, 0, ADDRESS_LEN, NULL, 0, 0, 7);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_street_2, 0, ADDRESS_LEN, NULL,0,0, 8);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bin d(c_hdbc1, (BYTE *) c_city, 0, ADDRESS_LEN, NULL, 0, 0, 9);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_state, 0, STATE_LEN, NULL, 0, 0, 10);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hd bc1, (BYTE *) c_zip, 0, ZIP_LEN, NULL, 0, 0, 11);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_phone, 0, PHONE_LEN, NULL, 0, 0, 12);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

        rc = bcp_bind(c_hdbc1, (BYTE * ) &c_since, 0, C_SINCE_LEN, NULL, 0,
SQLCHARACTER, 13);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_credit, 0, CREDIT_LEN, NULL, 0, 0, 14);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_h dbc1, (BYTE *) &c_credit_lim, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 15);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_discount, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 16);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hd bc1);


        //  fix to avoid ODBC float to numeric conversion problem.

    //  rc = bcp_bind(c_hdbc1, (BYTE *) &c_balance, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 17);
        //  if (rc != SUCCEED)
        //          HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE * ) c_balance, 0, 5, NULL, 0, SQLCHARACTER, 17);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);


    rc = bcp_bind(c_hdbc1, (BYTE *) &c_ytd_payment, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 18);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bi nd(c_hdbc1, (BYTE *) &c_payment_cnt, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 19);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_delivery_cnt,0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 20);
        if (rc != SUCCEED)
                HandleErr orDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_data, 0, 500, NULL, 0, 0, 21);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

    for (i = 0; i < customers_per_district; i++)
    {
                c_id = customer_buf[i].c_id;
                c_d_id = customer_buf[i].c_d_id  ;
                c_w_id = customer_buf[i].c_w_id;

                strcpy(c_first, customer_buf[i].c_first);
                strcpy(c_middle, customer_buf[i].c_middle);
                strcpy(c_last, customer_buf[i].c_last);
                strcpy(c_street_1, customer_buf[i].c_street_1);
                strcpy(c_street_2, customer_buf[i]  .c_street_2);
                strcpy(c_city, customer_buf[i].c_city);
                strcpy(c_state, customer_buf[i].c_state);
                strcpy(c_zip, customer_buf[i].c_zip);
                strcpy(c_phone, customer_buf[i].c_phone);
                strcpy(c_credit, customer_buf[i].c_credit);

                FormatDate(&c_since);


                c_credit_lim = customer_buf[i].c_credit_lim;
                c_discount = customer_buf[i].c_discount;

                //  fix to avoid ODBC float to numeric conversion
problem.
                //  c_balance = customer_buf[i].c_balance;
                strcpy(c_balance, customer_buf[i].c_balance);

                c_ytd_payment = customer_buf[i].c_ytd_payment;
                c_payment_cnt = customer_buf[i].c_payment_cnt;
                c_delivery_cnt = customer_buf[i].c_delivery_cnt;

                strcpy(c_data, customer_buf[i].c_data);
```

```
                        // Send data to server
                        rc = bcp_sendrow(c_hdbc1);
                        if (rc != SUCCEED)
                                HandleErrorDBC(c_hdbc1);

                        customer_rows_loaded++;
                        CheckForCommit(c_hdbc1, c_hstmt1, customer_rows_loaded,
"customer", &customer_time_start ->time_start);
    }

}


//=======================================================   ===========
//
// Function   : LoadHistoryTable
//
//=====================================================================

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];
            RETCODE                 rc;

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
1);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
2);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
3);
            if (rc != SUC CEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
4);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
5);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

            rc = bcp_bind(c_hdbc2, (BYTE *) &h_date, 0, H_DATE_LEN, NULL, 0,
SQLCHARACTER, 6);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &h_amount, 0, SQL_VARLEN_DATA, NU    LL, 0,
SQLFLT8, 7);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) h_data, 0, H_DATA_LEN, NULL, 0, 0, 8);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    for (i = 0; i < customers_per_district; i++)
    {
                        c_id = customer_buf[i].c_id;
                        c_d_id = customer_buf[i].c_d_id;
                        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)
                                HandleErrorDBC(c_hdbc2);
                        history_rows_loaded++;
                        CheckForCommit(c_hdbc2, c_hstmt2, history_rows_loaded,
"history", &history_time_start ->time_start);
    }

}


//=======================================================   =======-===============
//
// Function   : LoadOrders
//
//=====================================================================

void LoadOrders()
{
            LOADER_TIME_STRUCT      orders_time_start;
            LOADER_TIME_STRUCT      new_order_time_start;
            LOADER_TIME_STRUCT      order_line_time_start;
            short                                   w_id;
    short           d_id;
            DWORD
            dwThreadID[MAX_ORDER_THREADS];
            HANDLE                                  hThread[MAX_ORDER_THREADS];
            char                                    name[20];
            RETCODE
            rc;
            char
            bcphint[128];
            char
            err_log_path_ord[256];
            char
            err_log_path_nord[256];
            char
            err_log_path_ordl[256];

            // 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);
            strcpy(err_log_path_ord,aptr ->log_path);
            strcat(err_log_path_ord,"orders.err");
            rc = bcp_init(o_hdbc1, name, NULL, err_log_path_ord, 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);
            strcpy(err_log_path_nord,aptr ->log_path);
            strcat(err_log_path_nord,"neword.err");
            rc = bcp_init(o_hdbc2, name, NULL, err_log_path_nord, 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, BCPHIN TS, (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);
            strcpy(err_log_path_ordl,aptr ->log_path);
            strcat(err_log_path_ordl,"ordline.err");
            rc = bcp_init(o_hdbc3, name, NULL, err_log_path_ordl, 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      = 0;
            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_wa rehouse; 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("...Loadi ng 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,

                                      0,

                                      &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,

                                          0,

                                          (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 (CloseHandl e(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     i;
                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 ORDE  RLINE
//
//=================================================================

void OrdersBufLoad(int d_id, int w_id)
{

                int     cust[ORDERS_PER_DISTRICT+1];
                long    o_id;
                short   ol;

                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_i d = 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)
                                {
                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         i;
        long        o_id ;
                short         o_d_id;
                short         o_w_id;
        long        o_c_id;
        short       o_carrier_id;
        short       o_ol_cnt;
        short       o_all_local;
                char                        o_entry_d[O_ENTRY_D_LEN+1];
                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, NUL    L, 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++)
    {
                        o_id         = orders_buf[i].o_id;
                        o_d_id       = orders_buf[i].o_d_id;
                        o_w_id       = orders_buf[i].o_w_id  ;
                        o_c_id       = orders_buf[i].o_c_id;
                        o_carrier_id = orders_buf[i].o_carrier_id;
                        o_ol_cnt     = orders_buf[i].o_ol_cnt;
                        o_all_local  = orders_buf[i].o_all_local;


                        FormatDate(&o_entry_d);

                        // send data to server
                        rc = bcp_sendrow(o_hdbc1);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(o_hdbc1);

                        orders_rows_loaded++;
                        CheckForCommit(o_hdbc1, o_hstmt1, orders_rows_loaded,
"orders", &orders_time_start ->time_start);
    }

            // rcint = bcp_batch(o_hdbc1);
            // if (rcint < 0)
            //          HandleErrorDB C(o_hdbc1);

            if ((o_w_id == aptr ->num_warehouses) && (o_d_id == 10))
            {
                        rcint = bcp_done(o_hdbc1);
                        if (rcint < 0)
                                    HandleErrorDBC(o_hdbc1);

                        SQLFreeStmt(o_hstmt1, SQL_DROP);
                        SQLDisconnect(o_hdbc1);
                        SQLFreeConnect(o_hdbc1);

                        // if build index after load...
                        if ((aptr ->build_index == 1) && (aptr ->index_order ==
0))
                                    BuildIndex("idxordcl");

                        // build non -clustered index
                        if (aptr ->build_index == 1)
                                    BuildIndex("idxordnc");
            }

}


//=========================================  ========================
//
// Function   : LoadNewOrderTable
//
//=================================================================

void LoadNewOrderTable(LOADER_TIME_STRUCT *new_order_time_start)
{
    int         i;
    long        o_id;
    short       o_d_id;
    short       o_w_id;
            RETCODE                     rc;
            DBINT                       rcint;

            // Bind NEW -ORDER data

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
1);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

    rc = bcp_bin d(o_hdbc2, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
2);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
3);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

            for (i = first_new_order; i < last_new_order; i++)
            {
                        o_id    = orders_buf[i].o_id;
                        o_d_id  = orders_buf[i].o_d_id;
                        o_w_id  = orders_buf[i].o_w_id;

                        rc = bcp_sendrow(o_hdbc2);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(o_hdbc2);


                        new_order_row s_loaded++;


                        CheckForCommit(o_hdbc2, o_hstmt2,
new_order_rows_loaded, "new_order", &new_order_time_start   ->time_start);
            }

            // rcint = bcp_batch(o_hdbc2);
            // if (rcint < 0)
            //          HandleErrorDBC(o_hdbc2);

            if ((o_w_id == aptr ->num_warehouses) && (o_d _id == 10))
            {
                        rcint = bcp_done(o_hdbc2);
                        if (rcint < 0)
                                    HandleErrorDBC(o_hdbc2);

                        SQLFreeStmt(o_hstmt2, SQL_DROP);
                        SQLDisconnect(o_hdbc2);
                        SQLFreeConnect(o_hdbc2);

                        // if build index after load...
                        if ((aptr ->build_index == 1) && (a ptr->index_order ==
0))
                                    BuildIndex("idxnodcl");

            }

}


//=================================================================
//
// Function   : LoadOrderLineTable
//
//=================================================================

void LoadOrderLineTable(LOADER_TIME_STRUCT *order_line_time_start)
{
            int         i,j;
    long        o_id;
            short       o_d_id;
            short       o_w_id;
    long        ol;
            long        ol_i_id;
    short       ol_supply_w_id;
    short       ol_quantity;
    double      ol_amount;
    char        ol_dist_info[DIST_INFO_LEN+1];
            char                        ol_delivery_d[OL_DELIVERY_D_LEN+1];
            RETCODE                     rc;
            DBINT                       rcint;

            // bind ORDER -LINE data
    rc = bcp_bind(o_hdbc3, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
1);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
2);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0,     SQLINT2,
3);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
4);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_i_id, 0, SQL_VARLEN_D   ATA, NULL, 0,
SQLINT4, 5);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_supply_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 6);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

           rc = bcp_bind(o_hdbc3, (BYTE *) &ol  _delivery_d, 0, OL_DELIVERY_D_LEN,
NULL, 0, SQLCHARACTER, 7);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    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);

    rc = bcp_bind(o_hdbc3, (BYTE *) ol_dist_info, 0, DIST_INFO_LEN, NULL, 0, 0,
10);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

            for (i = 0; i < orders_per_district; i++)
    {
                        o_id    = orders_buf[i].o_id;
                        o_d_id  = orders_buf[i].o_d_id;
                        o_w_id  = orders_buf[i].o_w_id;

                        for (j=0; j < orders_buf[i].o_ol_cnt; j++)
                        {
                                    ol              =
orders_buf[i].o_ol[j].ol;
                                    ol_i_id         =
orders_buf[i].o_ol[j].ol_i_id;
                                    ol_supply_w_id =
orders_buf[i].o_ol[j].ol_supply_w_id;
                                    ol_quantity     =
orders_buf[i].o_ol[j].ol_quantity;
                                    ol_amount       =
orders_buf[i].o_ol[j].ol_amount;

            strcpy(ol_deliver y_d,orders_buf[i].o_ol[j].ol_delivery_d);


            strcpy(ol_dist_info,orders_buf[i].o_ol[j].ol_dist_info);

                                    rc = bcp_sendrow(o_hdbc3);
                                    if (rc != SUCCEED)

                                                HandleErrorDBC(o_hdbc3);


                                    order_line_rows_loaded++;
                                    CheckForCommit(o_hdbc3, o_hstmt3,
order_line_rows_loaded, "order_line", &order_line_time_start   ->time_start);
                        }

            }

            // rcint = bcp_batch(o_hdbc3);
            // if (rcint < 0)
            //          HandleErrorDBC(o_hdbc3);

            if ((o_w_id == aptr ->num_warehouses) && (o_d_id == 10))
            {
                        rcint = bcp_done(o_hdbc3) ;
                        if (rcint < 0)
                                    HandleErrorDBC(o_hdbc3);

                        SQLFreeStmt(o_hstmt3, SQL_DROP);
                        SQLDisconnect(o_hdbc3);
                        SQLFreeConnect(o_hdbc3);

                        // if build index after load...
```

```
                        if ((aptr->build_index == 1) && (aptr ->index_order ==
0))
                                BuildIndex("idx odlcl");

        }

}


//================================================================
//
// Function   : GetPermutation
//
//================================================================

void GetPermutation(int perm[], int n)
{
        int i, r, t;

        for (i=1;i<=n;i++)
                perm[i] = i;

        for (i=1;i<=n;i++)
        {
                r = RandomNumber(i,n);
                t = perm[i];
                perm[i] = perm[r];
                perm[r] = t;
        }

}


//================================================================
//
// Function   : CheckForCom mit
//
//================================================================

void CheckForCommit(HDBC hdbc,
                                                        HSTMT hstmt,
                                                int rows_loaded,
                                                        char
*table_name,
                                                long *time_start)
{

    long      time_end, time_diff;
        // DBINT      rcint;

    if ( !(rows_loaded % aptr ->batch) )
    {

                        // rcint = bcp_batch(hdbc);
                        // if (rcint < 0)
                        //          HandleErrorDBC(hdbc);

                        time_end = (TimeNow() / MILLI);
                        time_diff = time_end  - *time_start;

                        printf(" -> Loaded %ld rows into %s in %ld sec   - Total
= %d (%.2f rps) \n",
                                aptr->batch,
                                table_name,
                                                time_diff,
                                rows_loaded,
                                                (float) aptr ->batch /
(time_diff ? time_diff : 1L));

                        *time_start = time_end;
    }

    return;
}


//=========================================  ========================
//
// Function   : OpenConnections
//
//================================================================

void OpenConnections()
{

        RETCODE         rc;

        char                                    szDriverString[300];
        char                                    szDriverStringOut[1024] ;
        SQLSMALLINT                 cbDriverStringOut;


        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);
        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_hdb  c3);

        SQLSetConnectAttr(i_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
        SQLSetConnectAttr(w_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
        SQLSetConnectAttr(c_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
        SQLSetConnectAttr(c_hdbc2, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
        SQLSetConnectAttr(o_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
        SQLSetConnectAttr(o_hdbc2, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
        SQLSetConnectAttr(o_hdbc3, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );

        // Open connections to SQL Server

        // Connection 1

        sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

        rc = SQLSetConnectOption (i_hdbc1, SQL_PACKET_SIZE, aptr  -
>pack_size);
        if (rc != SUCCEED)
                HandleErrorDBC(i_hdbc1);

        rc = SQLDriverConnect ( i_hdbc1,
                                                                        NULL,

        (SQLCHAR*)&szDriv erString[0] ,

        SQL_NTS,

        (SQLCHAR*)&szDriverStringOut[0],

        sizeof(szDriverStringOut),

        &cbDriverStringOut,

        SQL_DRIVER_NOPROMPT );
        if (rc != SUCCEED)
                HandleErrorDBC(i_hdbc1);

        // Connection 2

        sprintf( szDriverString , "DR  IVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

        rc = SQLSetConnectOption (w_hdbc1, SQL_PACKET_SIZE, aptr  -
>pack_size);
        if (rc != SUCCEED)
                HandleErro rDBC(w_hdbc1);

        rc = SQLDriverConnect ( w_hdbc1,

        NULL,

        (SQLCHAR*)&szDriverString[0] ,

        SQL_NTS,

        (SQLCHAR*)&szDriverStringOut[0],

        sizeof(szDriverStringOut),

        &cbDriverStringOut,

        SQL_DRIVER_NOPROMPT );
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);

        // Connection 3

        sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

        rc = SQLSe tConnectOption (c_hdbc1, SQL_PACKET_SIZE, aptr  -
>pack_size);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

        rc = SQLDriverConnect ( c_hdbc1,

        NULL,

        (SQLCHAR*)&szDriverString[0] ,

        SQL_NTS,

        (SQLCHAR*)&szDriverStringOut[0],

        sizeof(szDriverStringOut),

        &cbDriverStringOut,

        SQL_DRIVER_NOPROMPT );
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc1);

        // Connection 4

        sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

        rc = SQLSetConnectOption (c_hdbc2, SQL_PACKET_SIZE, aptr  -
>pack_size);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc2);

        rc = SQLDriverConnect ( c_hdbc2,

        NULL,

        (SQLCHAR*)&szDriverString[0] ,
```

```
                SQL_NTS,

                (SQLCHAR*)&szDriverStringOut[0],

                sizeof(szDriverStringOut),

                &cbDriverStringOut,

                SQL_DRIVER_NOPROMPT );
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

                // Connection 5

                sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

                rc = SQLSetConnectOption (o_hdbc1, SQL_PACKET_SIZE, aptr  -
>pack_size);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

                rc = SQLDriverConnect ( o_hdbc1,

                NULL,

                (SQLCHAR*)&szDriverString[0] ,

                SQL_NTS,

                (SQLCHAR*)&szDriverStringOut[0],

                sizeof(szDriverStringOut),

                &cbDriverStringOut,

                SQL_DRIVER_NOPROMPT );
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

                // Connection 6

                sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

                rc = SQLSetConnectOption (o_hdbc2, SQL_PACKET_SIZE, aptr  -
>pack_size);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

                rc = SQLDriverConnect ( o_hdbc2,

                NULL,

                (SQLCHAR*)&szDriverString[0] ,

                SQL_NTS,

                (SQLCHAR*)& szDriverStringOut[0],

                sizeof(szDriverStringOut),

                &cbDriverStringOut,

                SQL_DRIVER_NOPROMPT );
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

                // Connection 7

                sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DAT  ABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

                rc = SQLSetConnectOption (o_hdbc3, SQL_PACKET_SIZE, aptr  -
>pack_size);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

                rc = SQLDriverConnect ( o_hd bc3,

                NULL,

                (SQLCHAR*)&szDriverString[0] ,

                SQL_NTS,

                (SQLCHAR*)&szDriverStringOut[0],

                sizeof(szDriverStringOut),

                &cbDriverStringOut,

                SQL_DRIVER_NOPROMPT );
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

}

//====================================================================
//
// Function name: BuildIndex
//
//====================================================================

void BuildIndex(char        *index_script)
{
                char          cmd[256];

                printf("Star ting index creation:  %s \n",index_script);

                sprintf(cmd, "osql  -S%s -U%s -P%s -e -i%s\\%s.sql > %s%s.log",
                                                        aptr->server,
                                                        aptr->user,
                                                        aptr->password,
                                                        aptr->index_script_path,
                                                        index_script,
                                                        aptr->log_path,
                                                        index_script);

                system(cmd);

                printf("Finished index creation:  %s  \n",index_script);
}


void HandleErrorDBC (SQLHDBC  hdbc1)
{

                SQLCHAR                 SqlState[6],
Msg[SQL_MAX_MESSAGE_LENGTH];
                SQLINTEGER  NativeError;
                SQLSMALLINT i, MsgLen;
                SQLRETURN   rc2;
                char                    timebuf[128];
                char                    datebuf[128];
                char                    err_log_path[256];
                FILE                    *fp1;

                i = 1;
                while (( rc2 = SQLGetDiagRec(SQL_HANDLE_DBC , hdbc1, i, SqlState ,
&NativeError,
                                                        Msg, sizeof(Msg) ,
&MsgLen )) != SQL_NO_DATA )
                {
                                sprintf( szLastError , "%s" ,  Msg );

                                _strtime(ti mebuf);
                                _strdate(datebuf);

                                printf( "[%s : %s] %s \n" , datebuf, timebuf,
szLastError);

                                strcpy(err_log_path,aptr ->log_path);
                                strcat(err_log_path,"tpccldr.err");
                                fp1 = fopen(err_log_path,"w");
                                //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 HandleErrorSTMT (HSTMT  hstmt1)
{

                SQLCHAR                 SqlState[6],
Msg[SQL_MAX_MES SAGE_LENGTH];
                SQLINTEGER  NativeError;
                SQLSMALLINT i, MsgLen;
                SQLRETURN   rc2;
                char                    timebuf[128];
                char                    datebuf[128];
                char                    err_log_path[256];
                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);

                                strcpy(err_log_path,aptr ->log_path);
                                strcat(err_ log_path,"tpccldr.err");
                                fp1 = fopen(err_log_path,"w");
                                //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   : CheckDataBase
//
//====================================================================

void CheckDataBase()
{

        RETCODE         rc;

        char                                    szDriverString[300];
        char                                    szDriverStringOut[1024];
        char                                    TablesBitMap[9] =
{"000000000"};
        int                                                     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 = SQLSetConn ectAttr( 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 appea  r 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 sysobje  cts
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 'O' 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 <= 8; i++)
                {
                        switch(i)
                        {
                        case 0:
                                if (TablesBitMap[i] == 'O')
                                {
                                        printf("The
Warehouse table is missing or damaged.  \n");
                                        ExitFlag = 1;
                                }
                                break;
                        case 1:
                                if (TablesBitMap[i] == 'O')
                                {
                                        printf("The
District table is missing or damaged.  \n");
                                        ExitFlag = 1;
                                }
                                break;
                        case 2:
                                if (TablesBitMap[i] == 'O')
                                {
                                        printf("The
Customer table is missing or damaged.  \n");
                                        ExitFlag = 1;
                                }
                                break;
                        case 3:
                                if (TablesBitMa p[i] == 'O')
                                {
                                        printf("The
History table is missing or damaged.  \n");
                                        ExitFlag = 1;
                                }
                                break;
                        case 4:
                                if (TablesBitMap[i] == 'O')
                                {
                                        printf("The
New_Order table is missing or damaged.  \n");
                                        ExitFlag = 1;
                                }
                                break;
                        case 5:
                                if (TablesBitMap[i] == 'O')
                                {
                                        printf("The
Orders table is missing or damaged.  \n");
                                        ExitFlag = 1;
                                }
                                break;
                        case 6:
                                if (TablesBitMap[i] == 'O')
                                {
                                        printf("The
Order_Line table is missing or damaged.  \n");
                                        ExitFlag = 1;
                                }
                                break;
                        case 7:
                                if (TablesBitMap[i] == 'O')
                                {
                                        printf("The
Item table is missing or damaged.  \n");
                                        ExitFlag = 1;
                                }
                                break;
                        case 8:
                                if (TablesBitMap[i] == 'O')
                                {
                                        printf("The
Stock table  is missing or damaged. \n");
```

```
                                                                ExitFlag = 1;
                                                        }
                                                        break;
                                                }
                                        }

                                        // if one or more tables are missing, display message
and exit the loader
                                        if (ExitFlag = 1)
                                        {
                                                printf("\nExiting TPC-C Loader!\n");
                                                printf("\nCheck LOGS\\ directory for
database\n");
                                                printf("or table creation errors. \n");

                                                // cleanup database connections and
handles
                                                SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
                                                SQLDisconnect(v_hdbc);
                                                SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

                                                exit(1);
                                        }
                        }

                        // cleanup databa se connections and handles
                        SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
                        SQLDisconnect(v_hdbc);
                        SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

                        return;
}
```

Appendix C : Tunable Parameters

RTE input parameter

The following parameters were used with Microsoft BenchCraft RTE..

Profile: 3850wAudit
File Path: C:\BenchCraft\3850wAudit.pro
Version: 3

Number of Engines: 10

Name: DRIVER01
Description:
Directory: c:\drv01
Machine: rte01
Parameter Set: TPCC
Index: 0
Seed: 42554
Configured Users: 3850
Pipe Name: DRIVER11809672718
Connect Rate: 500
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER02
Description:
Directory: c:\drv02
Machine: rte01
Parameter Set: TPCC
Index: 100000000
Seed: 42554
Configured Users: 3850
Pipe Name: DRIVER21809739671
Connect Rate: 500
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER03
Description:
Directory: c:\drv03
Machine: rte02
Parameter Set: TPCC
Index: 200000000
Seed: 42554
Configured Users: 3850
Pipe Name: DRIVER31809769828
Connect Rate: 500
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER04
Description:
Directory: c:\drv04
Machine: rte02
Parameter Set: TPCC
Index: 300000000
Seed: 42554
Configured Users: 3850
Pipe Name: DRIVER41809841125
Connect Rate: 500
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER05
Description:
Directory: c:\drv05
Machine: rte03
Parameter Set: TPCC
Index: 400000000
Seed: 42554
Configured Users: 3850
Pipe Name: DRIVER51809865937
Connect Rate: 500
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER06
Description:
Directory: c:\drv06
Machine: rte03
Parameter Set: TPCC
Index: 500000000
Seed: 42554
Configured Users: 3850
Pipe Name: DRIVER61809907062
Connect Rate: 500
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER07
Description:
Directory: c:\drv07
Machine: rte04
Parameter Set: TPCC
Index: 600000000
Seed: 42554
Configured Users: 3850
Pipe Name: DRIVER71809924359
Connect Rate: 500
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER08
Description:
Directory: c:\drv08
Machine: rte04
Parameter Set: TPCC
Index: 700000000
Seed: 42554
Configured Users: 3850
Pipe Name: DRIVER81809949078
Connect Rate: 500
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER09
Description:
Directory: c:\drv09
Machine: rte04
Parameter Set: TPCC
Index: 800000000
Seed: 42554
Configured Users: 3850
Pipe Name: DRIVER91809978500
Connect Rate: 500
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 2

Name: DRIVER10
Description:
Directory: c:\drv10
Machine: rte04
Parameter Set: TPCC
Index: 900000000
Seed: 42554
Configured Users: 3850
Pipe Name: DRIVER10-2131595296
Connect Rate: 500
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 3

Number of User groups: 10

Driver Engine: DRIVER01
IIS Server: cl0101
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1 - 385

w_id Min Warehouse: 1
w_id Max Warehouse: 3850
Scale: Normal
User Count: 3850
District id: 1
Scale Down: No

Driver Engine: DRIVER02
IIS Server: cl0102
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 386 - 770
w_id Min Warehouse: 1
w_id Max Warehouse: 3850
Scale: Normal
User Count: 3850
District id: 1
Scale Down: No

Driver Engine: DRIVER03
IIS Server: cl0201
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 771 - 1155
w_id Min Warehouse: 1
w_id Max Warehouse: 3850
Scale: Normal
User Count: 3850
District id: 1
Scale Down: No

Driver Engine: DRIVER04
IIS Server: cl0202
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1156 - 1540
w_id Min Warehouse: 1
w_id Max Warehouse: 3850
Scale: Normal
User Count: 3850
District id: 1
Scale Down: No

Driver Engine: DRIVER05
IIS Server: cl0301
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1541 - 1925
w_id Min Warehouse: 1
w_id Max Warehouse: 3850
Scale: Normal
User Count: 3850
District id: 1
Scale Down: No

Driver Engine: DRIVER06
IIS Server: cl0302
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1926 - 2310
w_id Min Warehouse: 1
w_id Max Warehouse: 3850
Scale: Normal
User Count: 3850
District id: 1
Scale Down: No

Driver Engine: DRIVER07
IIS Server: cl0401
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 2311 - 2695
w_id Min Warehouse: 1
w_id Max Warehouse: 3850
Scale: Normal
User Count: 3850
District id: 1
Scale Down: No

Driver Engine: DRIVER08
IIS Server: cl0402
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 2696 - 3080
w_id Min Warehouse: 1
w_id Max Warehouse: 3850
Scale: Normal
User Count: 3850
District id: 1
Scale Down: No

Driver Engine: DRIVER09
IIS Server: cl0501
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 3081 - 3465
w_id Min Warehouse: 1
w_id Max Warehouse: 3850
Scale: Normal
User Count: 3850
District id: 1
Scale Down: No

Driver Engine: DRIVER10
IIS Server: cl0502
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 3466 - 3850
w_id Min Warehouse: 1
w_id Max Warehouse: 3850
Scale: Normal
User Count: 3850
District id: 1
Scale Down: No

Number of Parameter Sets: 2

~Default
Default Parameter Set

Menu			Txn Weight	Think Time	Key Time	RT Delay	RT Fence	Delay
		New Order	10.00	12.05	18.01	0.10	5.00	
		Payment	10.00	12.05	3.01	0.10	5.00	
		Delivery	1.00	5.05	2.01	0.10	5.00	
		Stock Level	1.00	5.05	2.01	0.10	20.00	
		Order Status	1.00	10.05	2.01	0.10	5.00	

TPCC

Menu			Txn Weight	Think Time	Key Time	RT Delay	RT Fence	Delay
		New Order	44.92	12.05	18.01	0.10	5.00	
		Payment	43.02	12.05	3.01	0.10	5.00	
		Delivery	4.02	5.05	2.01	0.10	5.00	
		Stock Level	4.02	5.05	2.01	0.10	20.00	
		Order Status	4.02	10.05	2.01	0.10	5.00	

<Server Configuration>

Services

Only following services were activated during the measurement.

Application Management
COM+ Event System
Event Log
Intel(R) NMS
Logical Disk Manager
Network Connections
Plug and Play

Remote Procedure Call (RPC)
Windows Management Instrumentation Driver Extensions

Network Adapter Tunings

Network adapter (Intel 82544GC) settings were changed as follows;

FlowControl = Disabled
Offload Receive TCP Checksum = ON

Registry Tunings

The Registry keys are modified as follows;

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\I/O System]
"CountOperations"=dword:00000000
"LargeIrpStackLocations"=dword:00000007

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory Management]
"ClearPageFileAtShutdown"=dword:00000000
"DisablePagingExecutive"=dword:00000000
"IoPageLockLimit"=dword:00000000
"LargeSystemCache"=dword:00000000
"NonPagedPoolQuota"=dword:00000000
"NonPagedPoolSize"=dword:00000000
"PagedPoolQuota"=dword:00000000
"PagedPoolSize"=dword:00000000
"PagingFiles"=hex(7):43,00,3a,00,5c,00,70,00,61,00,67,00,65,00,66,00,69,00,6c,\
00,65,00,2e,00,73,00,79,00,73,00,20,00,32,00,30,00,34,00,36,00,20,00,34,00,\
30,00,39,00,32,00,00,00,00,00
"SecondLevelDataCache"=dword:00000000
"SystemPages"=dword:00000000
"PhysicalAddressExtension"=dword:00000001
"DontVerifyRandomDrivers"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\NDIS\Parameters]
"ProcessorAffinityMask"=dword:00000000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\dac2w2k\Parameters\Device]
"DriverParameter"="ConfigureSIR=16"

Boot Loader Configuration (boot.ini)

[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(1)\WINNT
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINNT="Microsoft Windows 2000 Advanced Server /3GB /PAE" /3GB /PAE /fastdetect
multi(0)disk(0)rdisk(0)partition(1)\WINNT="Microsoft Windows 2000 Advanced Server" /fastdetect

System Information

System Information report written at: 06/09/2002 07:25:56 PM
[System Information]

[Following are sub-categories of this main category]

[System Summary]

Item	Value
OS Name	Microsoft Windows 2000 Advanced Server
Version	5.0.2195 Service Pack 2 Build 2195
OS Manufacturer	Microsoft Corporation
System Name	SHASTA
System Manufacturer	NEC
System Model	Express5800/140Rb-4 [N8100-762]
System Type	X86-based PC
Processor	x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor	x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor	x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor	x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor	x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor	x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor	x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
Processor	x86 Family 15 Model 1 Stepping 1 GenuineIntel ~1597 Mhz
BIOS Version	PhoenixBIOS 4.0 Release 6.0
Windows Directory	C:\WINNT
System Directory	C:\WINNT\System32
Boot Device	\Device\Harddisk0\Partition1
Locale	United States
User Name	SHASTA\Administrator
Time Zone	Pacific Daylight Time
Total Physical Memory	8,190,048 KB
Available Physical Memory	8,003,024 KB
Total Virtual Memory	18,334,584 KB
Available Virtual Memory	18,094,868 KB
Page File Space	10,144,536 KB
Page File	C:\pagefile.sys

[Hardware Resources]

[Following are sub-categories of this main category]

[Conflicts/Sharing]

Resource Device
No conflicted/shared resources

[DMA]

Channel	Device	Status
4	Direct memory access controller	OK
1	ECP Printer Port (LPT1)	OK
2	Standard floppy disk controller	OK

[Forced Hardware]

Device PNP Device ID
No Forced Hardware

[I/O]

Address Range	Device	Status
0x0000-0x0CF7	PCI bus	OK
0x0000-0x0CF7	Direct memory access controller	OK
0x0D00-0x0FFF	PCI bus	OK
0x1FF0-0x240F	PCI bus	OK
0x2000-0x20FF	ATI Technologies Inc. RAGE XL PCI	OK
0x03B0-0x03BB	ATI Technologies Inc. RAGE XL PCI	OK
0x03C0-0x03DF	ATI Technologies Inc. RAGE XL PCI	OK
0x0A79-0x0A79	ISAPNP Read Data Port	OK
0x0279-0x0279	ISAPNP Read Data Port	OK
0x02F4-0x02F7	ISAPNP Read Data Port	OK
0x0060-0x0060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	OK
0x0064-0x0064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	OK
0x0070-0x0071	System CMOS/real time clock	OK
0x0010-0x001F	Direct memory access controller	OK
0x0080-0x008F	Direct memory access controller	OK
0x00C0-0x00DF	Direct memory access controller	OK
0x0020-0x0021	Programmable interrupt controller	OK
0x00A0-0x00A1	Programmable interrupt controller	OK
0x0040-0x0043	System timer	OK
0x00F0-0x00FF	Numeric data processor	OK
0x0061-0x0061	System speaker	OK
0x002E-0x002F	Motherboard resources	OK
0x0540-0x055F	Motherboard resources	OK
0x0560-0x0563	Motherboard resources	OK
0x0564-0x0567	Motherboard resources	OK
0x0568-0x056F	Motherboard resources	OK
0x00E0-0x00FF	Motherboard resources	OK
0x0600-0x061F	Motherboard resources	OK
0x0580-0x058D	Motherboard resources	OK
0x0092-0x0092	Motherboard resources	OK
0x0B04-0x0B04	Motherboard resources	OK
0x0419-0x041B	Motherboard resources	OK
0x041D-0x041F	Motherboard resources	OK
0x04D0-0x04D1	Motherboard resources	OK
0x04D6-0x04D6	Motherboard resources	OK
0x0C00-0x0C01	Motherboard resources	OK
0x0C06-0x0C08	Motherboard resources	OK
0x0C14-0x0C14	Motherboard resources	OK

0x0C49-0x0C4A Motherboard resources OK
0x0C50-0x0C51 Motherboard resources OK
0x0C52-0x0C52 Motherboard resources OK
0x0C6C-0x0C6C Motherboard resources OK
0x0C6F-0x0C6F Motherboard resources OK
0x0CD6-0x0CD7 Motherboard resources OK
0x0F50-0x0F58 Motherboard resources OK
0x0374-0x0375 Motherboard resources OK
0xFE00-0xFE20 Motherboard resources OK
0x0220-0x0220 Motherboard resources OK
0x0225-0x0225 Motherboard resources OK
0x0228-0x0228 Motherboard resources OK
0x022A-0x022E Motherboard resources OK
0x0102-0x0105 Motherboard resources OK
0x0107-0x0107 Motherboard resources OK
0x03F8-0x03FF Communications Port (COM1) OK
0x02F8-0x02FF Communications Port (COM2) OK
0x0378-0x037F ECP Printer Port (LPT1) OK
0x0778-0x077F ECP Printer Port (LPT1) OK
0x03F0-0x03F5 Standard floppy disk controller OK
0x03F7-0x03F7 Standard floppy disk controller OK
0x0CA6-0x0CA6 Microsoft ACPI-Compliant Embedded Controller OK
0x0CA7-0x0CA7 Microsoft ACPI-Compliant Embedded Controller OK
0x2400-0x240F Standard Dual Channel PCI IDE Controller OK
0x01F0-0x01F7 Primary IDE Channel OK
0x03F6-0x03F6 Primary IDE Channel OK
0x0170-0x0177 Secondary IDE Channel OK
0x0376-0x0376 Secondary IDE Channel OK
0x2420-0x2CFF PCI bus OK
0x2420-0x2CFF Intel (R) 82544GC based network connection OK
0x2800-0x28FF Adaptec AIC-7899 - Ultra160 SCSI OK
0x2C00-0x2CFF Adaptec AIC-7899 - Ultra160 SCSI OK
0x3000-0x4FFF PCI bus OK
0x3000-0x4FFF DEC 21154 PCI to PCI bridge OK
0x3000-0x4FFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0x4000-0x4FFF DEC 21154 PCI to PCI bridge OK
0x4000-0x4FFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0x5000-0x6FFF PCI bus OK
0x5000-0x6FFF DEC 21154 PCI to PCI bridge OK
0x5000-0x6FFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0x6000-0x6FFF DEC 21154 PCI to PCI bridge OK
0x6000-0x6FFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0x7000-0x8FFF PCI bus OK
0x7000-0x8FFF DEC 21154 PCI to PCI bridge OK
0x7000-0x8FFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0x8000-0x8FFF DEC 21154 PCI to PCI bridge OK
0x8000-0x8FFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0x0900-0x093F Motherboard resources OK
0x0940-0x097F Motherboard resources OK

[IRQs]

IRQ Number Device
9 Microsoft ACPI-Compliant System
20 ATI Technologies Inc. RAGE XL PCI
1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
12 PS/2 Compatible Mouse
8 System CMOS/real time clock
13 Numeric data processor
4 Communications Port (COM1)
3 Communications Port (COM2)
6 Standard floppy disk controller
14 Primary IDE Channel
10 Standard OpenHCD USB Host Controller
19 Intel (R) 82544GC based network connection
16 Adaptec AIC-7899 - Ultra160 SCSI
17 Adaptec AIC-7899 - Ultra160 SCSI
24 Mylex eXtremeRAID 2000 Disk Array Controller
25 Mylex eXtremeRAID 2000 Disk Array Controller
26 Mylex eXtremeRAID 2000 Disk Array Controller
27 Mylex eXtremeRAID 2000 Disk Array Controller
28 Mylex eXtremeRAID 2000 Disk Array Controller
29 Mylex eXtremeRAID 2000 Disk Array Controller

[Memory]

Range Device Status
0xA0000-0xBFFFF PCI bus OK
0xA0000-0xBFFFF ATI Technologies Inc. RAGE XL PCI OK
0xC0000-0xC3FFF PCI bus OK
0xC4000-0xC7FFF PCI bus OK
0xC8000-0xCBFFF PCI bus OK
0xCC000-0xCFFFF PCI bus OK
0xD0000-0xD3FFF PCI bus OK
0xD4000-0xD7FFF PCI bus OK
0xD8000-0xDBFFF PCI bus OK
0xDC000-0xDFFFF PCI bus OK
0xE0000-0xFFFFF PCI bus OK
0xF4000000-0xF5FFFFFF PCI bus OK
0xF4000000-0xF5FFFFFF ATI Technologies Inc. RAGE XL PCI OK
0xF5000000-0xF5FFFFFF ATI Technologies Inc. RAGE XL PCI OK
0xF4001000-0xF4001FFF Standard OpenHCD USB Host Controller OK
0xF6000000-0xF63FFFFF PCI bus OK
0xF6000000-0xF63FFFFF Intel (R) 82544GC based network connection OK
0xF6020000-0xF603FFFF Intel (R) 82544GC based network connection OK
0xF6040000-0xF6040FFF Adaptec AIC-7899 - Ultra160 SCSI OK
0xF6041000-0xF6041FFF Adaptec AIC-7899 - Ultra160 SCSI OK
0xF6500000-0xF77FFFFF PCI bus OK
0xF7800000-0xF87FFFFF PCI bus OK
0xF7800000-0xF87FFFFF DEC 21154 PCI to PCI bridge OK
0xF7800000-0xF87FFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xF6800000-0xF6FFFFFF DEC 21154 PCI to PCI bridge OK
0xF6800000-0xF6FFFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xF7000000-0xF77FFFFF DEC 21154 PCI to PCI bridge OK
0xF7000000-0xF77FFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xF8000000-0xF87FFFFF DEC 21154 PCI to PCI bridge OK
0xF8000000-0xF87FFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xF8800000-0xF99FFFFF PCI bus OK
0xF8800000-0xF99FFFFF DEC 21154 PCI to PCI bridge OK
0xF8800000-0xF99FFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xFA000000-0xFAFFFFFF PCI bus OK
0xFA000000-0xFAFFFFFF DEC 21154 PCI to PCI bridge OK
0xFA000000-0xFAFFFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xF9000000-0xF97FFFFF DEC 21154 PCI to PCI bridge OK
0xF9000000-0xF97FFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xFA800000-0xFAFFFFFF DEC 21154 PCI to PCI bridge OK
0xFA800000-0xFAFFFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xFB000000-0xFC1FFFFF PCI bus OK
0xFB000000-0xFC1FFFFF DEC 21154 PCI to PCI bridge OK
0xFB000000-0xFC1FFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xFC800000-0xFD7FFFFF PCI bus OK
0xFC800000-0xFD7FFFFF DEC 21154 PCI to PCI bridge OK
0xFC800000-0xFD7FFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xFB800000-0xFBFFFFFF DEC 21154 PCI to PCI bridge OK
0xFB800000-0xFBFFFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK
0xFD000000-0xFD7FFFFF DEC 21154 PCI to PCI bridge OK
0xFD000000-0xFD7FFFFF Mylex eXtremeRAID 2000 Disk Array Controller OK

[Components]

[Following are sub-categories of this main category]

[Multimedia]

[Following are sub-categories of this main category]

[Audio Codecs]

Codec Manufacturer Description Status File Version Size Creation Date
c:\winnt\system32\iac25_32.ax Intel Corporation IndeoR audio software OK
C:\WINNT\System32\IAC25_32.AX 2.05.53 195.00 KB (199,680 bytes) 12/7/1999 12:00:00 PM

c:\winnt\system32\lhacm.acm Microsoft Corporation
OK C:\WINNT\System32\LHACM.ACM
4.4.3385 33.27 KB (34,064 bytes) 5/22/2002 8:56:16 PM
c:\winnt\system32\msg723.acm Microsoft Corporation
OK C:\WINNT\System32\MSG723.ACM
4.4.3385 106.77 KB (109,328 bytes) 5/22/2002 8:56:16 PM
c:\winnt\system32\tssoft32.acm DSP GROUP, INC.
OK C:\WINNT\System32\TSSOFT32.ACM
1.01 9.27 KB (9,488 bytes) 12/7/1999 12:00:00 PM
c:\winnt\system32\msgsm32.acm Microsoft Corporation
OK C:\WINNT\System32\MSGSM32.ACM
5.00.2134.1 22.27 KB (22,800 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\msadp32.acm Microsoft Corporation
OK C:\WINNT\System32\MSADP32.ACM
5.00.2134.1 14.77 KB (15,120 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\msg711.acm Microsoft Corporation
OK C:\WINNT\System32\MSG711.ACM
5.00.2134.1 10.27 KB (10,512 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\imaadp32.acm Microsoft Corporation
OK C:\WINNT\System32\IMAADP32.ACM
5.00.2134.1 16.27 KB (16,656 bytes)
12/7/1999 12:00:00 PM

[Video Codecs]

Codec Manufacturer Description Status File Version Size Creation Date
c:\winnt\system32\ir50_32.dll Intel Corporation IndeoR video 5.10 OK C:\WINNT\System32\IR50_32.DLL
R.5.10.15.2.55 737.50 KB (755,200 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\msh261.drv Microsoft Corporation
OK C:\WINNT\System32\MSH261.DRV
4.4.3385 163.77 KB (167,696 bytes) 5/22/2002 8:56:16 PM
c:\winnt\system32\msh263.drv Microsoft Corporation
OK C:\WINNT\System32\MSH263.DRV
4.4.3385 252.27 KB (258,320 bytes) 5/22/2002 8:55:50 PM
c:\winnt\system32\msvidc32.dll Microsoft Corporation
OK C:\WINNT\System32\MSVIDC32.DLL
5.00.2134.1 27.27 KB (27,920 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\ir32_32.dll Intel(R) Corporation
OK C:\WINNT\System32\IR32_32.DLL Not Available 194.50 KB (199,168 bytes) 12/7/1999 12:00:00 PM
c:\winnt\system32\iccvid.dll Radius Inc. OK
C:\WINNT\System32\ICCVID.DLL 1.10.0.6 108.00 KB (110,592 bytes) 12/7/1999 12:00:00 PM
c:\winnt\system32\msrle32.dll Microsoft Corporation
OK C:\WINNT\System32\MSRLE32.DLL
5.00.2134.1 10.77 KB (11,024 bytes)
12/7/1999 12:00:00 PM

[CD-ROM]

Item Value
Drive D:
Description CD-ROM Drive
Media Loaded False
Media Type CD-ROM
Name MATSHITA CD-ROM CR-594
Manufacturer (Standard CD-ROM drives)
Status OK
Transfer Rate Not Available
SCSI Target ID 0
PNP Device ID IDE\CDROMMATSHITA_CD-ROM_CR-594_____YS1S____\5&FB0C83D&0&0.0.0

[Sound Device]

Item Value
No sound devices

[Display]

Item Value
Name ATI Technologies Inc. RAGE XL PCI
PNP Device ID PCI\VEN_1002&DEV_4752&SUBSYS_81361033&REV_27\3&267A616A&0&10
Adapter Type ATI RAGE XL PCI, ATI Technologies Inc. compatible
Adapter Description ATI Technologies Inc. RAGE XL PCI
Adapter RAM 4.00 MB (4,194,304 bytes)
Installed Drivers atidrab.dll
Driver Version 5.00.2179.1
INF File display.inf (atirage3 section)
Color Planes 1
Color Table Entries 256
Resolution 640 x 480 x 60 hertz
Bits/Pixel 8

[Infrared]

Item Value
No infrared devices

[Input]

[Following are sub-categories of this main category]

[Keyboard]

Item Value
Description Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
Name Enhanced (101- or 102-key)
Layout 00000409
PNP Device ID ACPI\PNP0303\4&35118DFF&0
NumberOfFunctionKeys 12

[Pointing Device]

Item Value
Hardware Type PS/2 Compatible Mouse
Number of Buttons 3
Status OK
PNP Device ID ACPI\PNP0F13\4&35118DFF&0
Power Management Supported False
Double Click Threshold 6
Handedness Right Handed Operation

[Modem]

Item Value
No modems

[Network]

[Following are sub-categories of this main category]

[Adapter]

Item Value
Name [00000000] RAS Async Adapter
Adapter Type Not Available
Product Name RAS Async Adapter
Installed True
PNP Device ID Not Available
Last Reset 6/9/2002 12:17:38 PM
Index 0
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Not Available

Name [00000001] WAN Miniport (L2TP)
Adapter Type Not Available
Product Name WAN Miniport (L2TP)
Installed True
PNP Device ID ROOT\MS_L2TPMINIPORT\0000
Last Reset 6/9/2002 12:17:38 PM
Index 1
Service Name Rasl2tp
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Rasl2tp
Driver c:\winnt\system32\drivers\rasl2tp.sys (50800, 5.00.2179.1)

Name [00000002] WAN Miniport (PPTP)
Adapter Type Wide Area Network (WAN)
Product Name WAN Miniport (PPTP)
Installed True
PNP Device ID ROOT\MS_PPTPMINIPORT\0000
Last Reset 6/9/2002 12:17:38 PM

Index 2
Service Name PptpMiniport
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 50:50:54:50:30:30
Service Name PptpMiniport
Driver c:\winnt\system32\drivers\raspptp.sys (47856, 5.00.2160.1)

Name [00000003] Direct Parallel
Adapter Type Not Available
Product Name Direct Parallel
Installed True
PNP Device ID ROOT\MS_PTIMINIPORT\0000
Last Reset 6/9/2002 12:17:38 PM
Index 3
Service Name Raspti
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Raspti
Driver c:\winnt\system32\drivers\raspti.sys (16880, 5.00.2146.1)

Name [00000004] WAN Miniport (IP)
Adapter Type Not Available
Product Name WAN Miniport (IP)
Installed True
PNP Device ID ROOT\MS_NDISWANIP\0000
Last Reset 6/9/2002 12:17:38 PM
Index 4
Service Name NdisWan
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name NdisWan
Driver c:\winnt\system32\drivers\ndiswan.sys (90096, 5.00.2195.2779)

Name [00000005] Intel (R) 82544GC based network connection
Adapter Type Ethernet 802.3
Product Name Intel (R) 82544GC based network connection
Installed True
PNP Device ID PCI\VEN_8086&DEV_100D&SUBSYS_81361033&REV_02\3&13C0B0C5&0&18
Last Reset 6/9/2002 12:17:38 PM
Index 5
Service Name E1000
IP Address 10.1.1.201
IP Subnet 255.255.255.0
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:00:4C:7F:5B:07
Service Name E1000
IRQ Number 19
I/O Port 0x2420-0x2CFF
Driver c:\winnt\system32\drivers\e1000nt5.sys (72112, 3.41.341.0000)

[Protocol]

Item Value
Name MSAFD Tcpip [TCP/IP]
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 16 bytes
MaximumMessageSize 0 bytes
MessageOriented False
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData True
SupportsGracefulClosing True
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD Tcpip [UDP/IP]
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 16 bytes
MaximumMessageSize 65467 bytes
MessageOriented True
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting True

Name RSVP UDP Service Provider
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 16 bytes
MaximumMessageSize 65467 bytes
MessageOriented True
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption True
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting True

Name RSVP TCP Service Provider
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 16 bytes
MaximumMessageSize 0 bytes
MessageOriented False
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption True
SupportsExpeditedData True
SupportsGracefulClosing True
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{20FB8BBF-BB2F-45D2-9607-DED460F823BC}] SEQPACKET 0
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{20FB8BBF-BB2F-45D2-9607-DED460F823BC}] DATAGRAM 0
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False

SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{518EB735-64B7-488A-A919-38F2E831237B}] SEQPACKET 1
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{518EB735-64B7-488A-A919-38F2E831237B}] DATAGRAM 1
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{3129D442-9D4D-4426-AAC8-8F81D99468C3}] SEQPACKET 2
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{3129D442-9D4D-4426-AAC8-8F81D99468C3}] DATAGRAM 2
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

[WinSock]

Item Value
File c:\winnt\system32\winsock.dll
Version 3.10
Size 2.80 KB (2,864 bytes)

File c:\winnt\system32\wsock32.dll
Version 5.00.2195.2871
Size 21.27 KB (21,776 bytes)

[Ports]

[Following are sub-categories of this main category]

[Serial]

Item Value
Name COM1
Status OK
PNP Device ID ACPI\PNP0501\1
Maximum Input Buffer Size 0
Maximum Output Buffer Size False
Settable Baud Rate True
Settable Data Bits True
Settable Flow Control True
Settable Parity True
Settable Parity Check True
Settable Stop Bits True
Settable RLSD True
Supports RLSD True
Supports 16 Bit Mode False
Supports Special Characters False
Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy 0
Abort Read/Write on Error 0
Binary Mode Enabled -1
Continue XMit on XOff 0
CTS Outflow Control 0
Discard NULL Bytes 0
DSR Outflow Control 0
DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0
Error Replacement Enabled 0
Event Character 0
Parity Check Enabled 0
RTS Flow Control Type Enable
XOff Character 19
XOffXMit Threshold 512
XOn Character 17
XOnXMit Threshold 2048
XOnXOff InFlow Control 0
XOnXOff OutFlow Control 0
IRQ Number 4
I/O Port 0x03F8-0x03FF
Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

Name COM2
Status OK
PNP Device ID ACPI\PNP0501\2
Maximum Input Buffer Size 0
Maximum Output Buffer Size False
Settable Baud Rate True
Settable Data Bits True
Settable Flow Control True
Settable Parity True
Settable Parity Check True
Settable Stop Bits True
Settable RLSD True
Supports RLSD True
Supports 16 Bit Mode False
Supports Special Characters False
Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy 0
Abort Read/Write on Error 0
Binary Mode Enabled -1
Continue XMit on XOff 0
CTS Outflow Control 0
Discard NULL Bytes 0
DSR Outflow Control 0
DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0
Error Replacement Enabled 0
Event Character 0
Parity Check Enabled 0
RTS Flow Control Type Enable
XOff Character 19
XOffXMit Threshold 512
XOn Character 17
XOnXMit Threshold 2048
XOnXOff InFlow Control 0
XOnXOff OutFlow Control 0

IRQ Number 3
I/O Port 0x02F8-0x02FF
Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

[Parallel]

Item Value
Name LPT1
PNP Device ID ACPI\PNP0401\4&35118DFF&0

[Storage]

[Following are sub-categories of this main category]

[Drives]

Item Value
Drive A:
Description 3 1/2 Inch Floppy Drive

Drive C:
Description Local Fixed Disk
Compressed False
File System NTFS
Size 8.46 GB (9,088,901,120 bytes)
Free Space 4.17 GB (4,475,617,280 bytes)
Volume Name
Volume Serial Number BCB5B141
Partition Disk #0, Partition #0
Partition Size 8.46 GB (9,088,902,144 bytes)
Starting Offset 32256 bytes
Drive Description Disk drive
Drive Manufacturer (Standard disk drives)
Drive Model SEAGATE ST39102LC SCSI Disk Device
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 1
Drive SCSIBus 0
Drive SCSILogicalUnit 0
Drive SCSIPort 2
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 9097159680 bytes
Drive TotalCylinders 1106
Drive TotalSectors 17767890
Drive TotalTracks 282030
Drive TracksPerCylinder 255

Drive E:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #6, Partition #0
Partition Size 100.00 GB (107,372,772,864 bytes)
Starting Offset 32256 bytes
Drive Description \\.\PHYSICALDRIVE6
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 2
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 9
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 128297917440 bytes
Drive TotalCylinders 15598
Drive TotalSectors 250581870
Drive TotalTracks 3977490
Drive TracksPerCylinder 255

Drive F:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #1, Partition #0
Partition Size 45.00 GB (48,315,262,464 bytes)
Starting Offset 32256 bytes
Drive Description \\.\PHYSICALDRIVE1
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 4
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive G:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #2, Partition #0
Partition Size 45.00 GB (48,315,262,464 bytes)
Starting Offset 32256 bytes
Drive Description \\.\PHYSICALDRIVE2
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 5
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive H:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #3, Partition #0
Partition Size 45.00 GB (48,315,262,464 bytes)
Starting Offset 32256 bytes
Drive Description \\.\PHYSICALDRIVE3
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 6
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive I:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #4, Partition #0
Partition Size 45.00 GB (48,315,262,464 bytes)
Starting Offset 32256 bytes
Drive Description \\.\PHYSICALDRIVE4
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3

Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 7
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive J:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #5, Partition #0
Partition Size 45.00 GB (48,315,262,464 bytes)
Starting Offset 32256 bytes
Drive Description \\.\PHYSICALDRIVE5
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 8
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive L:
Description Local Fixed Disk
Compressed False
File System NTFS
Size 19.49 GB (20,925,108,224 bytes)
Free Space 19.03 GB (20,432,068,608 bytes)
Volume Name bkuproot
Volume Serial Number C034DA0E
Partition Disk #6, Partition #1
Partition Size 19.49 GB (20,925,112,320 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE6
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 2
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 9
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 128297917440 bytes
Drive TotalCylinders 15598
Drive TotalSectors 250581870
Drive TotalTracks 3977490
Drive TracksPerCylinder 255

Drive M:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #1, Partition #1
Partition Size 75.00 GB (80,533,716,480 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE1
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 4
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive N:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #2, Partition #1
Partition Size 75.00 GB (80,533,716,480 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE2
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 5
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive O:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #3, Partition #1
Partition Size 75.00 GB (80,533,716,480 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE3
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 6
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive P:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #4, Partition #1
Partition Size 75.00 GB (80,533,716,480 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE4
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 7
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive Q:

Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available
Partition Disk #5, Partition #1
Partition Size 75.00 GB (80,533,716,480 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE5
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 8
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive S:
Description Local Fixed Disk
Compressed False
File System NTFS
Size 443.44 GB (476,145,004,544 bytes)
Free Space 386.49 GB (414,987,972,608 bytes)
Volume Name b01
Volume Serial Number 2056B38A
Partition Disk #1, Partition #2
Partition Size 443.44 GB (476,145,008,640 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE1
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 4
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive T:
Description Local Fixed Disk
Compressed False
File System NTFS
Size 443.44 GB (476,145,004,544 bytes)
Free Space 386.49 GB (414,988,038,144 bytes)
Volume Name b02
Volume Serial Number 4C7BED10
Partition Disk #2, Partition #2
Partition Size 443.44 GB (476,145,008,640 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE2
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 5
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive U:
Description Local Fixed Disk
Compressed False
File System NTFS
Size 443.44 GB (476,145,004,544 bytes)
Free Space 386.49 GB (414,988,038,144 bytes)
Volume Name b03
Volume Serial Number A09EA0A0
Partition Disk #3, Partition #2
Partition Size 443.44 GB (476,145,008,640 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE3
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 6
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive V:
Description Local Fixed Disk
Compressed False
File System NTFS
Size 443.44 GB (476,145,004,544 bytes)
Free Space 386.49 GB (414,988,038,144 bytes)
Volume Name b04
Volume Serial Number B4C93793
Partition Disk #4, Partition #2
Partition Size 443.44 GB (476,145,008,640 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE4
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 7
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

Drive W:
Description Local Fixed Disk
Compressed False
File System NTFS
Size 443.44 GB (476,145,004,544 bytes)
Free Space 386.49 GB (414,988,038,144 bytes)
Volume Name b05
Volume Serial Number B8FB0D5E
Partition Disk #5, Partition #2
Partition Size 443.44 GB (476,145,008,640 bytes)
Starting Offset Not Available
Drive Description \\.\PHYSICALDRIVE5
Drive Manufacturer Not Available
Drive Model Not Available
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 3
Drive SCSIBus 4
Drive SCSILogicalUnit 0
Drive SCSIPort 8
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 604994019840 bytes
Drive TotalCylinders 73553
Drive TotalSectors 1181628945
Drive TotalTracks 18756015
Drive TracksPerCylinder 255

[SCSI]

Item Value
Name Adaptec AIC-7899 - Ultra160 SCSI
Caption Adaptec AIC-7899 - Ultra160 SCSI
Driver adpu160m
Status OK
PNP Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81361033&REV_0
1\3&13C0B0C5&0&20
Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81361033&REV_0

1\3&13C0B0C5&0&20
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 16
I/O Port 0x2800-0x28FF
Driver c:\winnt\system32\drivers\adpu160m.sys (81776, d4.0S2 (4.10.4000))

Name Adaptec AIC-7899 - Ultra160 SCSI
Caption Adaptec AIC-7899 - Ultra160 SCSI
Driver adpu160m
Status OK
PNP Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81361033&REV_0 1\3&13C0B0C5&0&21
Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81361033&REV_0 1\3&13C0B0C5&0&21
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 17
I/O Port 0x2C00-0x2CFF
Driver c:\winnt\system32\drivers\adpu160m.sys (81776, d4.0S2 (4.10.4000))

Name Mylex eXtremeRAID 2000 Disk Array Controller
Caption Mylex eXtremeRAID 2000 Disk Array Controller
Driver dac2w2k
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&254DAD54&0&4040
Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&254DAD54&0&4040
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 24
I/O Port 0x3000-0x4FFF
Driver c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Caption Mylex eXtremeRAID 2000 Disk Array Controller
Driver dac2w2k
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&94A037D&0&4048
Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&94A037D&0&4048
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 25
I/O Port 0x4000-0x4FFF
Driver c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Caption Mylex eXtremeRAID 2000 Disk Array Controller
Driver dac2w2k
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&2C59ABA9&0&4040
Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&2C59ABA9&0&4040
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 26
I/O Port 0x5000-0x6FFF
Driver c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Caption Mylex eXtremeRAID 2000 Disk Array Controller
Driver dac2w2k
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&23E0528&0&4048
Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&23E0528&0&4048
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 27
I/O Port 0x6000-0x6FFF
Driver c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Caption Mylex eXtremeRAID 2000 Disk Array Controller
Driver dac2w2k
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&12E15626&0&4040
Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&12E15626&0&4040
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 28
I/O Port 0x7000-0x8FFF
Driver c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)

Name Mylex eXtremeRAID 2000 Disk Array Controller
Caption Mylex eXtremeRAID 2000 Disk Array Controller
Driver dac2w2k
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&1BB65AAB&0&4048
Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_0 0\4&1BB65AAB&0&4048
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 29
I/O Port 0x8000-0x8FFF
Driver c:\winnt\system32\drivers\dac2w2k.sys (185584, 9.00-04)

[Printing]

Name Port Name Server Name
No printing information

[Problem Devices]

Device PNP Device ID Error Code
IBM Netfinity ActivePCI Device ACPI\IBM37D0\2&DABA3FF&0 32

[USB]

Device PNP Device ID
Standard OpenHCD USB Host Controller
PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_0 5\3&267A616A&0&7A
USB Root Hub USB\ROOT_HUB\4&AF5358C&0

[Software Environment]

[Following are sub-categories of this main category]

[Drivers]

Name	Description	File	Type	Started	Start Mode
	State	Status	Error Control		Accept
Pause	Accept Stop				
abiosdsk	Abiosdsk	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Ignore
	False	False			
abp480n5	abp480n5	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
acpi	Microsoft ACPI Driver	c:\winnt\system32\drivers\acpi.sys			
	Kernel Driver	True	Boot	Running	
	OK	Normal	False	True	
acpiec	Microsoft Embedded Controller Driver				
	c:\winnt\system32\drivers\acpiec.sys			Kernel	
Driver	True	Boot	Running	OK	Normal
	False	True			
adpu160m	adpu160m	c:\winnt\system32\drivers\adpu160m.sys			
	Kernel Driver	True	Boot	Running	
	OK	Normal	False	True	
afd	AFD Networking Support Environment				
	c:\winnt\system32\drivers\afd.sys		Kernel Driver		
	True	Auto	Running	OK	Normal
	False	True			
aha154x	Aha154x	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
aic116x	aic116x	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
aic78u2	aic78u2	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal

```
                False   False
aic78xx aic78xx Not Available           Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
ami0nt  ami0nt  Not Available           Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
amsint  amsint  Not Available           Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
asc     asc     Not Available           Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
asc3350p asc3350p Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
asc3550 asc3550 Not Available           Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
asyncmac RAS Asynchronous Media Driver
                c:\winnt\system32\drivers\asyncmac.sys   Kernel
Driver  False   Manual  Stopped OK      Normal
                False   False
atapi   Standard IDE/ESDI Hard Disk Controller
                c:\winnt\system32\drivers\atapi.sysKernel Driver
                True    Boot    Running OK      Normal
                False   True
atdisk  Atdisk  Not Available           Kernel Driver
                False   Disabled Stopped OK      Ignore
                False   False
atirage3 atirage3 c:\winnt\system32\drivers\atimpab.sys
                Kernel Driver           True    Manual  Running
                OK      Ignore  False   True
atmarpc ATM ARP Client Protocol
                c:\winnt\system32\drivers\atmarpc.sys   Kernel
Driver  False   Manual  Stopped OK      Normal
                False   False
audstub Audio Stub Driver
                c:\winnt\system32\drivers\audstub.sys   Kernel
Driver  True    Manual  Running OK      Normal
                False   True
beep    Beep    c:\winnt\system32\drivers\beep.sys
                Kernel Driver           True    System  Running
                OK      Normal  False   True
buslogic BusLogic Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
cd20xrnt cd20xrnt Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
cdaudio Cdaudio c:\winnt\system32\drivers\cdaudio.sys
                Kernel Driver           False   System  Stopped
                OK      Ignore  False   False
cdfs    Cdfs    c:\winnt\system32\drivers\cdfs.sys File
System Driver           True    Disabled Running OK
                Normal  False   True
cdrom   CD-ROM Driver
                c:\winnt\system32\drivers\cdrom.sys   Kernel
Driver  True    System  Running OK      Normal
                False   True
changer Changer Not Available           Kernel Driver
                False   System  Stopped OK      Ignore
                False   False
cpqarray Cpqarray Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
cpqarry2 cpqarry2 Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
cpqfcalm cpqfcalm Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
cpqfws2e cpqfws2e Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
dac2w2k dac2w2k c:\winnt\system32\drivers\dac2w2k.sys
                Kernel Driver           True    Boot    Running
                OK      Normal  False   True
dac960nt dac960nt Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
deckzpsx deckzpsx Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
dfsdriver DfsDriver c:\winnt\system32\drivers\dfs.sys File
System Driver           True    Boot    Running OK
                Normal  False   True
disk    Disk Driver c:\winnt\system32\drivers\disk.sys Kernel
Driver  True    Boot    Running OK      Normal
                False   True
diskperf Diskperf c:\winnt\system32\drivers\diskperf.sys
                Kernel Driver           False   Disabled Stopped
                OK      Normal  False   False
dmboot  dmboot  c:\winnt\system32\drivers\dmboot.sys
                Kernel Driver           False   Disabled Stopped
                OK      Normal  False   False
dmio    Logical Disk Manager Driver
                c:\winnt\system32\drivers\dmio.sys   Kernel
Driver  True    Boot    Running OK      Normal
                False   True
dmload  dmload  c:\winnt\system32\drivers\dmload.sys
                Kernel Driver           True    Boot    Running
                OK      Normal  False   True
e1000   Intel(R) PRO/1000 Adapter Driver
                c:\winnt\system32\drivers\e1000nt5.sys   Kernel
Driver  True    Manual  Running OK      Normal
                False   True
efs     EFS     c:\winnt\system32\drivers\efs.sys File
System Driver           True    Disabled Running OK
                Normal  False   True
explog  ExpLog  c:\winnt\system32\drivers\explog.sys
                Kernel Driver           True    System  Running
                OK      Normal  False   True
fastfat Fastfat c:\winnt\system32\drivers\fastfat.sys
                File System Driver      True    Disabled Running
                OK      Normal  False   True
fd16_700 Fd16_700 Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
fdc     Floppy Disk Controller Driver
                c:\winnt\system32\drivers\fdc.sys Kernel Driver
                True    Manual  Running OK      Normal
                False   True
fips    Fips    c:\winnt\system32\drivers\fips.sys Kernel
Driver  True    Auto    Running OK      Normal
                False   True
fireport fireport Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
flashpnt flashpnt Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
flpydisk Floppy Disk Driver
                c:\winnt\system32\drivers\flpydisk.sys   Kernel
Driver  True    Manual  Running OK      Normal
                False   True
ftdisk  Volume Manager Driver
                c:\winnt\system32\drivers\ftdisk.sys   Kernel
Driver  True    Boot    Running OK      Normal
                False   True
gamdrv  gamdrv  c:\winnt\system32\drivers\gamdrv.sys
                Kernel Driver           True    Boot    Running
                OK      Normal  False   True
gpc     Generic Packet Classifier
                c:\winnt\system32\drivers\msgpc.sys   Kernel
Driver  True    Manual  Running OK      Normal
                False   True
i8042prt i8042 Keyboard and PS/2 Mouse Port Driver
                c:\winnt\system32\drivers\i8042prt.sys   Kernel
Driver  True    System  Running OK      Normal
                False   True
ibmhpa  IBMHPA  c:\winnt\system32\drivers\ibmhpa.sys
                Kernel Driver           False   Disabled Stopped
                OK      Normal  False   False
ibmhpf  IBM Netfinity ActivePCI Filter Driver
                c:\winnt\system32\drivers\ibmhpf.sys   Kernel
Driver  True    Boot    Running OK      Normal
                False   True
ini910u ini910u Not Available           Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
intelide IntelIde Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
ipfilterdriver  IP Traffic Filter Driver
                c:\winnt\system32\drivers\ipfltdrv.sys   Kernel
Driver  False   Manual  Stopped OK      Normal
                False   False
ipinip  IP in IP Tunnel Driver
                c:\winnt\system32\drivers\ipinip.sys   Kernel
Driver  False   Manual  Stopped OK      Normal
                False   False
ipnat   IP Network Address Translator
                c:\winnt\system32\drivers\ipnat.sysKernel Driver
                False   Manual  Stopped OK      Normal
                False   False
ipsec   IPSEC driver
                c:\winnt\system32\drivers\ipsec.sys   Kernel
Driver  False   Manual  Stopped OK      Normal
                False   False
ipsraidn ipsraidn Not Available         Kernel Driver
                False   Disabled Stopped OK      Normal
                False   False
isapnp  PnP ISA/EISA Bus Driver
                c:\winnt\system32\drivers\isapnp.sys   Kernel
Driver  True    Boot    Running OK      Critical
```

```
        False   True
kbdclass Keyboard Class Driver
        c:\winnt\system32\drivers\kbdclass.sys          Kernel
Driver  True    System  Running OK      Normal
        False   True
ksecdd  KSecDD  c:\winnt\system32\drivers\ksecdd.sys
        Kernel Driver           True    Boot    Running
        OK      Normal  False   True
lbrtfdc lbrtfdc Not Available           Kernel Driver
        False   System  Stopped OK      Ignore
        False   False
lp6nds35 lp6nds35       Not Available   Kernel Driver
        False   Disabled        Stopped OK      Normal
        False   False
macdisk macdisk c:\winnt\system32\drivers\mac2w2k.sys
        Kernel Driver           True    Boot    Running
        OK      Normal  False   True
mnmdd   mnmdd   c:\winnt\system32\drivers\mnmdd.sys
        Kernel Driver           True    System  Running
        OK      Ignore  False   True
modem   Modem   c:\winnt\system32\drivers\modem.sys
        Kernel Driver           False   Manual  Stopped
        OK      Ignore  False   False
mouclass Mouse Class Driver
        c:\winnt\system32\drivers\mouclass.sys          Kernel
Driver  True    System  Running OK      Normal
        False   True
mountmgr MountMgr       c:\winnt\system32\drivers\mountmgr.sys
        Kernel Driver           True    Boot    Running
        OK      Normal  False   True
mraid35x mraid35x       Not Available   Kernel Driver
        False   Disabled        Stopped OK      Normal
        False   False
mrxsmb  MRXSMB  c:\winnt\system32\drivers\mrxsmb.sys
        File System Driver      True    System  Running
        OK      Normal  False   True
msfs    Msfs    c:\winnt\system32\drivers\msfs.sys File
System Driver           True    System  Running OK
        Normal  False   True
msksrv  Microsoft Streaming Service Proxy
        c:\winnt\system32\drivers\msksrv.sys            Kernel
Driver  False   Manual  Stopped OK      Normal
        False   False
mspclock Microsoft Streaming Clock Proxy
        c:\winnt\system32\drivers\mspclock.sys          Kernel
Driver  False   Manual  Stopped OK      Normal
        False   False
mspqm   Microsoft Streaming Quality Manager Proxy
        c:\winnt\system32\drivers\mspqm.sys             Kernel
Driver  False   Manual  Stopped OK      Normal
        False   False
mup     Mup     c:\winnt\system32\drivers\mup.sys File
System Driver           True    Boot    Running OK
        Normal  False   True
ncrc710 Ncrc710 Not Available           Kernel Driver
        False   Disabled        Stopped OK      Normal
        False   False
ndis    NDIS System Driver      c:\winnt\system32\drivers\ndis.sys
        Kernel Driver           True    Boot    Running
        OK      Normal  False   True
ndistapi Remote Access NDIS TAPI Driver
        c:\winnt\system32\drivers\ndistapi.sys          Kernel
Driver  True    Manual  Running OK      Normal
        False   True
ndiswan Remote Access NDIS WAN Driver
        c:\winnt\system32\drivers\ndiswan.sys           Kernel
Driver  True    Manual  Running OK      Normal
        False   True
ndproxy NDIS Proxyc:\winnt\system32\drivers\ndproxy.sys
        Kernel Driver           True    Manual  Running
        OK      Normal  False   True
nechwid nechwid c:\winnt\system32\drivers\nechwid.sys
        Kernel Driver           False   Manual  Stopped
        OK      Normal  False   False
necras  NEC Baseboard Management Controller
        c:\winnt\system32\drivers\necras.sys            Kernel
Driver  True    System  Running OK      Normal
        False   True
netbios NetBIOS Interface
        c:\winnt\system32\drivers\netbios.sys           File
System Driver           True    System  Running OK
        Normal  False   True
netbt   NetBios over Tcpip      c:\winnt\system32\drivers\netbt.sys
        Kernel Driver           True    System  Running
        OK      Normal  False   True
netdetect NetDetect     c:\winnt\system32\drivers\netdtect.sys
        Kernel Driver           False   Manual  Stopped
        OK      Normal  False   False
npfs    Npfs    c:\winnt\system32\drivers\npfs.sys File
System Driver           True    System  Running OK
        Normal  False   True
ntfs    Ntfs    c:\winnt\system32\drivers\ntfs.sys File
System Driver           True    Disabled        Running OK
        Normal  False   True
null    Null    c:\winnt\system32\drivers\null.sys      Kernel
Driver  True    System  Running OK      Normal
        False   True
nwlnkflt IPX Traffic Filter Driver
        c:\winnt\system32\drivers\nwlnkflt.sys          Kernel
Driver  False   Manual  Stopped OK      Normal
        False   False
nwlnkfwd IPX Traffic Forwarder Driver
        c:\winnt\system32\drivers\nwlnkfwd.sys          Kernel
Driver  False   Manual  Stopped OK      Normal
        False   False
openhci Microsoft USB Open Host Controller Driver
        c:\winnt\system32\drivers\openhci.sys           Kernel
Driver  True    Manual  Running OK      Normal
        False   True
parallel Parallel class driver
        c:\winnt\system32\drivers\parallel.sys          Kernel
Driver  True    Manual  Running OK      Normal
        False   True
parport Parallel port driver
        c:\winnt\system32\drivers\parport.sys           Kernel
Driver  True    System  Running OK      Ignore
        False   True
partmgr PartMgr c:\winnt\system32\drivers\partmgr.sys
        Kernel Driver           True    Boot    Running
        OK      Normal  False   True
parvdm  ParVdm  c:\winnt\system32\drivers\parvdm.sys
        Kernel Driver           True    Auto    Running
        OK      Ignore  False   True
pci     PCI Bus Driver  c:\winnt\system32\drivers\pci.sys
        Kernel Driver           True    Boot    Running
        OK      Critical        False   True
pcidump PCIDump Not Available           Kernel Driver
        False   System  Stopped OK      Ignore
        False   False
pciide  PCIIde  c:\winnt\system32\drivers\pciide.sys
        Kernel Driver           True    Boot    Running
        OK      Normal  False   True
pcmcia  Pcmcia  c:\winnt\system32\drivers\pcmcia.sys
        Kernel Driver           False   Disabled        Stopped
        OK      Normal  False   False
pdcomp  PDCOMP  Not Available           Kernel Driver
        False   Manual  Stopped OK      Ignore
        False   False
pdframe PDFRAME Not Available           Kernel Driver
        False   Manual  Stopped OK      Ignore
        False   False
pdreli  PDRELI  Not Available           Kernel Driver
        False   Manual  Stopped OK      Ignore
        False   False
pdrframe PDRFRAME       Not Available   Kernel
Driver  False   Manual  Stopped OK      Ignore
        False   False
pptpminiport    WAN Miniport (PPTP)
        c:\winnt\system32\drivers\raspptp.sys           Kernel
Driver  True    Manual  Running OK      Normal
        False   True
ptilink Direct Parallel Link Driver
        c:\winnt\system32\drivers\ptilink.sys           Kernel
Driver  True    Manual  Running OK      Normal
        False   True
ql1080  ql1080  Not Available           Kernel Driver
        False   Disabled        Stopped OK      Normal
        False   False
ql10wnt Ql10wnt Not Available           Kernel Driver
        False   Disabled        Stopped OK      Normal
        False   False
ql1240  ql1240  Not Available           Kernel Driver
        False   Disabled        Stopped OK      Normal
        False   False
ql2100  ql2100  Not Available           Kernel Driver
        False   Disabled        Stopped OK      Normal
        False   False
rasacd  Remote Access Auto Connection Driver
        c:\winnt\system32\drivers\rasacd.sys            Kernel
Driver  True    System  Running OK      Normal
        False   True
rasl2tp WAN Miniport (L2TP)
        c:\winnt\system32\drivers\rasl2tp.sys           Kernel
Driver  True    Manual  Running OK      Normal
        False   True
raspti  Direct Parallel
        c:\winnt\system32\drivers\raspti.sys            Kernel
Driver  True    Manual  Running OK      Normal
        False   True
rca     Microsoft Streaming Network Raw Channel Access
        c:\winnt\system32\drivers\rca.sys Kernel Driver
        False   Manual  Stopped OK      Normal
        False   False
rdbss   Rdbss   c:\winnt\system32\drivers\rdbss.sys
        File System Driver      True    System  Running
        OK      Normal  False   True
```

```
rdpwd     RDPWD    c:\winnt\system32\drivers\rdpwd.sys
          Kernel Driver          False     Manual    Stopped
          OK       Ignore        False     False
redbook   Digital CD Audio Playback Filter Driver
          c:\winnt\system32\drivers\redbook.sys          Kernel
Driver    False    System        Stopped   OK        Normal
          False    False
serenum   Serenum Filter Driver
          c:\winnt\system32\drivers\serenum.sys          Kernel
Driver    True     Manual        Running   OK        Normal
          False    True
serial    Serial port driver
          c:\winnt\system32\drivers\serial.sys           Kernel
Driver    True     System        Running   OK        Ignore
          False    True
sfloppy   Sfloppy  c:\winnt\system32\drivers\sfloppy.sys
          Kernel Driver          False     System    Stopped
          OK       Ignore        False     False
sglfb     sglfb    Not Available           Kernel Driver
          False    System        Stopped   OK        Normal
          False    False
simbad    Simbad   Not Available           Kernel Driver
          False    Disabled      Stopped   OK        Normal
          False    False
slic      Alacritech Accelerator
          c:\winnt\system32\drivers\slic100.sys          Kernel
Driver    False    Manual        Stopped   OK        Normal
          False    False
sparrow   Sparrow  Not Available           Kernel Driver
          False    Disabled      Stopped   OK        Normal
          False    False
spud      Special Purpose Utility Driver
          c:\winnt\system32\drivers\spud.sys Kernel Driver
          False    Manual        Stopped   OK        Normal
          False    False
srv       Srv      c:\winnt\system32\drivers\srv.sys      File
System Driver      False         Manual    Stopped   OK
          Normal   False         False
swenum    Software Bus Driver
          c:\winnt\system32\drivers\swenum.sys           Kernel
Driver    True     Manual        Running   OK        Normal
          False    True
symc810   symc810  Not Available           Kernel Driver
          False    Disabled      Stopped   OK        Normal
          False    False
symc8xx   symc8xx  Not Available           Kernel Driver
          False    Disabled      Stopped   OK        Normal
          False    False
sym_hi    sym_hi   Not Available           Kernel Driver
          False    Disabled      Stopped   OK        Normal
          False    False
tcpip     TCP/IP Protocol Driver c:\winnt\system32\drivers\tcpip.sys
          Kernel Driver          True      System    Running
          OK       Normal        False     True
tdasync   TDASYNC  c:\winnt\system32\drivers\tdasync.sys
          Kernel Driver          False     Manual    Stopped
          OK       Ignore        False     False
tdipx     TDIPX    c:\winnt\system32\drivers\tdipx.sys Kernel
Driver    False    Manual        Stopped   OK        Ignore
          False    False
tdnetb    TDNETB   c:\winnt\system32\drivers\tdnetb.sys
          Kernel Driver          False     Manual    Stopped
          OK       Ignore        False     False
tdpipe    TDPIPE   c:\winnt\system32\drivers\tdpipe.sys
          Kernel Driver          False     Manual    Stopped
          OK       Ignore        False     False
tdspx     TDSPX    c:\winnt\system32\drivers\tdspx.sys
          Kernel Driver          False     Manual    Stopped
          OK       Ignore        False     False
tdtcp     TDTCP    c:\winnt\system32\drivers\tdtcp.sys Kernel
Driver    False    Manual        Stopped   OK        Ignore
          False    False
termdd    Terminal Device Driver
          c:\winnt\system32\drivers\termdd.sys           Kernel
Driver    False    Disabled      Stopped   OK        Normal
          False    False
tga       tga      Not Available           Kernel Driver
          False    System        Stopped   OK        Ignore
          False    False
udfs      Udfs     c:\winnt\system32\drivers\udfs.sys File
System Driver      False         Disabled  Stopped   OK
          Normal   False         False
ultra66   ultra66  Not Available           Kernel Driver
          False    Disabled      Stopped   OK        Normal
          False    False
update    Microcode Update Driver
          c:\winnt\system32\drivers\update.sys           Kernel
Driver    True     Manual        Running   OK        Normal
          False    True
usbhub    Microsoft USB Standard Hub Driver
          c:\winnt\system32\drivers\usbhub.sys           Kernel
Driver    True     Manual        Running   OK        Normal
          False    True
vgasave   VgaSave  c:\winnt\system32\drivers\vga.sys Kernel
Driver    True     System        Running   OK        Ignore
          False    True
wanarp    Remote Access IP ARP Driver
          c:\winnt\system32\drivers\wanarp.sys           Kernel
Driver    True     Manual        Running   OK        Normal
          False    True
wdica     WDICA    Not Available           Kernel Driver
          False    Manual        Stopped   OK        Ignore
          False    False
nmscfg    NIC Management Service Configuration Driver
          \??\c:\winnt\system32\drivers\nmscfg.sys       Kernel
Driver    True     Manual        Running   OK        Normal
          False    True

[Environment Variables]

Variable  Value    User Name
ComSpec   %SystemRoot%\system32\cmd.exe
          <SYSTEM>
Os2LibPath         %SystemRoot%\system32\os2\dll;
          <SYSTEM>
Path
          %SystemRoot%\system32;%SystemRoot%;%SystemRoot
%\System32\Wbem;C:\Program Files\Microsoft SQL
Server\80\Tools\BINN  <SYSTEM>
windir    %SystemRoot%   <SYSTEM>
OS        Windows_NT     <SYSTEM>
PROCESSOR_ARCHITECTURE   x86      <SYSTEM>
PROCESSOR_LEVEL 15       <SYSTEM>
PROCESSOR_IDENTIFIER     x86 Family 15 Model 1 Stepping 1,
GenuineIntel             <SYSTEM>
PROCESSOR_REVISION       0101     <SYSTEM>
NUMBER_OF_PROCESSORS     8        <SYSTEM>
PATHEXT   .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH
          <SYSTEM>
TEMP      %SystemRoot%\TEMP<SYSTEM>
TMP       %SystemRoot%\TEMP<SYSTEM>
TEMP      %USERPROFILE%\Local Settings\Temp
          SHASTA\Administrator
TMP       %USERPROFILE%\Local Settings\Temp
          SHASTA\Administrator

[Jobs]

[ Following are sub-categories of this main category ]

[Print]

Document  Size       Owner      Notify     Status     Time
Submitted Start Time Until Time Elapsed Time           Pages
Printed   Job ID     Priority   Parameters             Driver
Name      Print Processor      Host Print Queue       Data Type
          Name
Unknown   Unknown    Unknown    Unknown    Unknown    Unknown
          Unknown    Unknown    Unknown    Unknown    Unknown
          Unknown    Unknown    Unknown    Unknown    Unknown
          Unknown    Unknown

[Network Connections]

Local Name         Remote Name          Type       Status
          User Name
No network connections information


[Running Tasks]

Name      Path     Process ID Priority   Min Working Set
          Max Working Set     Start Time Version    Size
          File Date
system idle process Not Available        0          0
          Not Available       Not Available        Not
Available Unknown  Unknown    Unknown
system    Not Available       8          8          0
          1413120  Not Available        Unknown    Unknown
          Unknown
smss.exe  c:\winnt\system32\smss.exe     184        11
          204800   1413120    6/9/2002 7:18:32 PM
          5.00.2195.2901      44.27 KB (45,328 bytes)
          12/7/1999 12:00:00 PM
csrss.exe Not Available       212        13         Not
Available Not Available       6/9/2002 7:18:39 PM Unknown
          Unknown  Unknown
winlogon.exe       c:\winnt\system32\winlogon.exe   232
          13       204800     1413120    6/9/2002 7:18:40 PM
          5.00.2195.2953      173.77 KB (177,936 bytes)
          12/7/1999 12:00:00 PM
services.exe       c:\winnt\system32\services.exe   260
          9        204800     1413120    6/9/2002 7:18:42 PM
          5.00.2195.2780      86.77 KB (88,848 bytes)
          12/7/1999 12:00:00 PM
lsass.exe c:\winnt\system32\lsass.exe    272        9
```

204800 1413120 6/9/2002 7:18:42 PM
5.00.2195.2964 32.77 KB (33,552 bytes)
12/7/1999 12:00:00 PM
svchost.exe c:\winnt\system32\svchost.exe 428
8 204800 1413120 6/9/2002 7:18:46 PM
5.00.2134.1 7.77 KB (7,952 bytes) 12/7/1999
12:00:00 PM
nmssvc.exe c:\winnt\system32\nmssvc.exe 456
8 204800 1413120 6/9/2002 7:18:47 PM
2.0.28.0 1.03 MB (1,077,248 bytes) 5/29/2002
7:01:58 PM
svchost.exe c:\winnt\system32\svchost.exe 344
8 204800 1413120 6/9/2002 7:22:25 PM
5.00.2134.1 7.77 KB (7,952 bytes) 12/7/1999
12:00:00 PM
explorer.exe c:\winnt\explorer.exe 560 8
204800 1413120 6/9/2002 7:22:26 PM
5.00.3315.2846 237.27 KB (242,960 bytes)
5/22/2002 9:14:03 PM
promon.exe c:\winnt\system32\promon.exe 600
8 204800 1413120 6/9/2002 7:22:27 PM
5.1.35.0 60.00 KB (61,440 bytes) 5/29/2002
7:02:01 PM
mmc.exe c:\winnt\system32\mmc.exe 676 8
204800 1413120 6/9/2002 7:22:34 PM
5.00.2195.2301 589.27 KB (603,408 bytes)
5/22/2002 9:13:50 PM
winmgmt.exe c:\winnt\system32\wbem\winmgmt.exe
684 8 204800 1413120 6/9/2002
7:22:36 PM 1.50.1085.0029 192.08 KB (196,685 bytes)
5/22/2002 9:14:07 PM
rsvp.exe c:\winnt\system32\rsvp.exe 848 8
204800 1413120 6/9/2002 7:25:22 PM
5.00.2167.1 172.77 KB (176,912 bytes)
12/7/1999 12:00:00 PM
wsam.exe c:\program files\mylex\workstation array
manager\wsam.exe 544 8 204800 1413120
6/9/2002 7:25:37 PM 1, 0, 0, 1 126.50 KB (129,536
bytes) 5/30/2002 6:03:17 AM
gamconfg.exe c:\program files\mylex\workstation array
manager\gamconfg.exe 788 13 204800
1413120 6/9/2002 7:25:37 PM Not Available
107.71 KB (110,290 bytes) 5/30/2002 6:03:17 AM

[Loaded Modules]

Name Version Size File Date Manufacturer
Path
gamconfg.exe Not Available 107.71 KB (110,290
bytes) 5/30/2002 6:03:17 AM Not Available c:\program
files\mylex\workstation array manager\gamconfg.exe
wsam.exe 1, 0, 0, 1 126.50 KB (129,536 bytes) 5/30/2002
6:03:17 AM c:\program files\mylex\workstation array
manager\wsam.exe
traffic.dll 5.00.2139.1 30.77 KB (31,504 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\traffic.dll
rsvp.exe 5.00.2167.1 172.77 KB (176,912 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\rsvp.exe
wshnetbs.dll 5.00.2134.1 7.77 KB (7,952 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\wshnetbs.dll
ntmarta.dll 5.00.2195.2862 98.77 KB (101,136 bytes)
5/22/2002 9:13:56 PM Microsoft Corporation
c:\winnt\system32\ntmarta.dll
perfos.dll 5.00.2155.1 21.27 KB (21,776 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\perfos.dll
provthrd.dll 1.50.1085.0000 68.07 KB (69,708 bytes)
5/22/2002 8:56:03 PM Microsoft Corporation
c:\winnt\system32\wbem\provthrd.dll
ntevt.dll 1.50.1085.0000 192.06 KB (196,669 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\wbem\ntevt.dll
psapi.dll 5.00.2134.1 28.27 KB (28,944 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\psapi.dll
framedyn.dll 1.50.1085.0000 164.05 KB (167,992
bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\wbem\framedyn.dll
cimwin32.dll 1.50.1085.0038 1.02 MB (1,073,232
bytes) 5/22/2002 9:14:06 PM Microsoft Corporation
c:\winnt\system32\wbem\cimwin32.dll
wbemess.dll 1.50.1085.0039 364.07 KB (372,804
bytes) 5/22/2002 9:14:06 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemess.dll
wbemcore.dll 1.50.1085.0036 628.07 KB (643,140
bytes) 5/22/2002 9:14:06 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemcore.dll
winmgmt.exe 1.50.1085.0029 192.08 KB (196,685
bytes) 5/22/2002 9:14:07 PM Microsoft Corporation
c:\winnt\system32\wbem\winmgmt.exe
fastprox.dll 1.50.1085.0037 144.08 KB (147,536 bytes)
5/22/2002 9:14:06 PM Microsoft Corporation
c:\winnt\system32\wbem\fastprox.dll
wbemsvc.dll 1.50.1085.0007 40.07 KB (41,036
bytes) 5/22/2002 9:14:07 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemsvc.dll
wbemcomn.dll 1.50.1085.0021 692.07 KB (708,675
bytes) 5/22/2002 9:14:06 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemcomn.dll
wbemprox.dll 1.50.1085.0045 40.08 KB (41,040
bytes) 5/22/2002 9:14:07 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemprox.dll
mlang.dll 5.00.3103.1000 510.77 KB (523,024 bytes)
5/22/2002 9:13:50 PM Microsoft Corporation
c:\winnt\system32\mlang.dll
cabinet.dll 5.00.2147.1 54.77 KB (56,080 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\cabinet.dll
msinfo32.dll 5.00.2177.1 312.27 KB (319,760
bytes) 5/22/2002 8:56:11 PM Microsoft Corporation c:\program
files\common files\microsoft shared\msinfo\msinfo32.dll
comdlg32.dll 5.00.3103.1000 236.77 KB (242,448
bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\comdlg32.dll
mmcndmgr.dll 5.00.2178.1 815.27 KB (834,832
bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\mmcndmgr.dll
msvcp50.dll 5.00.7051 552.50 KB (565,760 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\msvcp50.dll
mfc42u.dll 6.00.8665.0 972.05 KB (995,384 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\mfc42u.dll
mmc.exe 5.00.2195.2301 589.27 KB (603,408 bytes)
5/22/2002 9:13:50 PM Microsoft Corporation
c:\winnt\system32\mmc.exe
nmsapi.dll 2.0.28.0 144.00 KB (147,456 bytes) 5/29/2002
7:01:59 PM Intel Corporation c:\winnt\system32\nmsapi.dll
promon.exe 5.1.35.0 60.00 KB (61,440 bytes)
5/29/2002 7:02:01 PM Intel Corporation
c:\winnt\system32\promon.exe
urlmon.dll 5.00.3315.1000 441.27 KB (451,856 bytes)
5/22/2002 9:14:02 PM Microsoft Corporation
c:\winnt\system32\urlmon.dll
faxshell.dll 5.00.2134.1 8.27 KB (8,464 bytes) 12/7/1999
12:00:00 PM Microsoft Corporation
c:\winnt\system32\faxshell.dll
msacm32.dll 5.00.2134.1 65.27 KB (66,832
bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\msacm32.dll
avifil32.dll 5.00.2134.1 76.27 KB (78,096 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\avifil32.dll
msvfw32.dll 5.00.2134.1 113.77 KB (116,496
bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\msvfw32.dll
docprop2.dll 5.00.2178.1 297.77 KB (304,912
bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\docprop2.dll
browselc.dll 5.00.3315.2846 34.50 KB (35,328
bytes) 5/22/2002 9:13:42 PM Microsoft Corporation
c:\winnt\system32\browselc.dll
wininet.dll 5.00.3315.1000 456.77 KB (467,728 bytes)
5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\system32\wininet.dll
linkinfo.dll 5.00.2134.1 15.77 KB (16,144 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\linkinfo.dll
powrprof.dll 5.00.3103.1000 13.27 KB (13,584
bytes) 5/22/2002 9:13:58 PM Microsoft Corporation
c:\winnt\system32\powrprof.dll
batmeter.dll 5.00.3103.1000 20.27 KB (20,752
bytes) 5/22/2002 9:13:42 PM Microsoft Corporation
c:\winnt\system32\batmeter.dll
stobject.dll 5.00.2195.2780 79.27 KB (81,168 bytes)
5/22/2002 9:14:01 PM Microsoft Corporation
c:\winnt\system32\stobject.dll
webcheck.dll 5.00.3315.1000 251.77 KB (257,808
bytes) 5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\system32\webcheck.dll
msi.dll 1.11.2405.0 1.69 MB (1,767,184 bytes)
5/22/2002 9:13:52 PM Microsoft Corporation
c:\winnt\system32\msi.dll
netui1.dll 5.00.2134.1 210.27 KB (215,312 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\netui1.dll
netui0.dll 5.00.2134.1 70.27 KB (71,952 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\netui0.dll
ntlanman.dll 5.00.2157.1 35.27 KB (36,112
bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\ntlanman.dll
ntshrui.dll 5.00.2134.1 46.77 KB (47,888 bytes)

12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\ntshrui.dll
mydocs.dll 5.00.2920.0000 55.77 KB (57,104 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\mydocs.dll
browseui.dll 5.00.3315.2846 788.77 KB (807,696 bytes) 5/22/2002 9:13:42 PM Microsoft Corporation
c:\winnt\system32\browseui.dll
shdocvw.dll 5.00.3315.2879 1.05 MB (1,104,144 bytes) 5/22/2002 9:14:00 PM Microsoft Corporation
c:\winnt\system32\shdocvw.dll
explorer.exe 5.00.3315.2846 237.27 KB (242,960 bytes) 5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\explorer.exe
wmi.dll 5.00.2191.1 6.27 KB (6,416 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\wmi.dll
netshell.dll 5.00.2195.2779 457.27 KB (468,240 bytes)
5/22/2002 9:13:55 PM Microsoft Corporation
c:\winnt\system32\netshell.dll
netman.dll 5.00.2195.2779 89.27 KB (91,408 bytes)
5/22/2002 9:13:55 PM Microsoft Corporation
c:\winnt\system32\netman.dll
txfaux.dll 2000.2.3471.1 374.27 KB (383,248 bytes)
5/22/2002 9:14:02 PM Microsoft Corporation
c:\winnt\system32\txfaux.dll
es.dll 2000.2.3471.1 222.27 KB (227,600 bytes)
5/22/2002 9:13:47 PM Microsoft Corporation
c:\winnt\system32\es.dll
nmssvcps.dll 2.0.28.0 36.00 KB (36,864 bytes)
5/29/2002 7:01:59 PM Intel Corporation
c:\winnt\system32\nmssvcps.dll
rasdlg.dll 5.00.2195.2671 514.27 KB (526,608 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\rasdlg.dll
netcfgx.dll 5.00.2195.2228 534.77 KB (547,600 bytes)
5/22/2002 9:13:55 PM Microsoft Corporation
c:\winnt\system32\netcfgx.dll
nmssvc.exe 2.0.28.0 1.03 MB (1,077,248 bytes)
5/29/2002 7:01:58 PM Intel Corporation
c:\winnt\system32\nmssvc.exe
rasadhlp.dll 5.00.2168.1 7.27 KB (7,440 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\rasadhlp.dll
winrnr.dll 5.00.2160.1 18.77 KB (19,216 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\winrnr.dll
dhcpcsvc.dll 5.00.2195.2778 88.77 KB (90,896 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\dhcpcsvc.dll
tapi32.dll 5.00.2182.1 123.27 KB (126,224 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\tapi32.dll
rasman.dll 5.00.2195.2780 54.77 KB (56,080 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\rasman.dll
rasapi32.dll 5.00.2195.2671 189.77 KB (194,320 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\rasapi32.dll
icmp.dll 5.00.2134.1 7.27 KB (7,440 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\icmp.dll
iphlpapi.dll 5.00.2173.2 67.77 KB (69,392 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\iphlpapi.dll
rnr20.dll 5.00.2195.2871 35.77 KB (36,624 bytes)
5/22/2002 9:13:59 PM Microsoft Corporation
c:\winnt\system32\rnr20.dll
wshtcpip.dll 5.00.2195.2104 17.27 KB (17,680 bytes) 5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\system32\wshtcpip.dll
msafd.dll 5.00.2195.2779 106.77 KB (109,328 bytes)
5/22/2002 9:13:50 PM Microsoft Corporation
c:\winnt\system32\msafd.dll
rpcss.dll 5.00.2195.2815 231.27 KB (236,816 bytes)
5/22/2002 9:13:59 PM Microsoft Corporation
c:\winnt\system32\rpcss.dll
svchost.exe 5.00.2134.1 7.77 KB (7,952 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\svchost.exe
scecli.dll 5.00.2195.2780 105.27 KB (107,792 bytes)
5/22/2002 9:13:59 PM Microsoft Corporation
c:\winnt\system32\scecli.dll
atl.dll 3.00.8449 57.56 KB (58,938 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\atl.dll
certcli.dll 5.00.2195.2778 130.77 KB (133,904 bytes)
5/22/2002 9:13:44 PM Microsoft Corporation
c:\winnt\system32\certcli.dll
esent.dll 6.0.3940.13 1.08 MB (1,135,376 bytes)
5/22/2002 9:13:47 PM Microsoft Corporation
c:\winnt\system32\esent.dll
mswsock.dll 5.00.2195.2871 62.77 KB (64,272 bytes) 5/22/2002 9:13:54 PM Microsoft Corporation
c:\winnt\system32\mswsock.dll
ntdsatq.dll 5.00.2195.2878 31.27 KB (32,016 bytes)
5/22/2002 9:13:55 PM Microsoft Corporation
c:\winnt\system32\ntdsatq.dll
ntdsa.dll 5.00.2195.2899 990.77 KB (1,014,544 bytes)
5/22/2002 9:13:55 PM Microsoft Corporation
c:\winnt\system32\ntdsa.dll
kdcsvc.dll 5.00.2195.2878 137.77 KB (141,072 bytes)
5/22/2002 9:13:49 PM Microsoft Corporation
c:\winnt\system32\kdcsvc.dll
sfmapi.dll 5.00.2134.1 38.77 KB (39,696 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\sfmapi.dll
rtutils.dll 5.00.2168.1 43.77 KB (44,816 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\rtutils.dll
adsldpc.dll 5.00.2195.2842 127.27 KB (130,320 bytes)
5/22/2002 9:13:41 PM Microsoft Corporation
c:\winnt\system32\adsldpc.dll
activeds.dll 5.00.2195.2778 174.77 KB (178,960 bytes)
5/22/2002 9:13:38 PM Microsoft Corporation
c:\winnt\system32\activeds.dll
mprapi.dll 5.00.2181.1 79.27 KB (81,168 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\mprapi.dll
rassfm.dll 5.00.2195.2671 21.27 KB (21,776 bytes)
5/22/2002 9:13:58 PM Microsoft Corporation
c:\winnt\system32\rassfm.dll
mpr.dll 5.00.2195.2779 53.27 KB (54,544 bytes)
5/22/2002 9:13:50 PM Microsoft Corporation
c:\winnt\system32\mpr.dll
rsabase.dll 5.00.2195.2228 128.27 KB (131,344 bytes)
5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\rsabase.dll
schannel.dll 5.00.2195.2922 138.27 KB (141,584 bytes) 5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\schannel.dll
netlogon.dll 5.00.2195.2865 357.77 KB (366,352 bytes) 5/22/2002 9:13:55 PM Microsoft Corporation
c:\winnt\system32\netlogon.dll
msv1_0.dll 5.00.2195.2900 111.77 KB (114,448 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\msv1_0.dll
kerberos.dll 5.00.2195.2913 198.77 KB (203,536 bytes) 5/22/2002 9:13:49 PM Microsoft Corporation
c:\winnt\system32\kerberos.dll
msprivs.dll 5.00.2154.1 41.50 KB (42,496 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\msprivs.dll
samsrv.dll 5.00.2195.2918 369.77 KB (378,640 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\samsrv.dll
cryptdll.dll 5.00.2135.1 41.27 KB (42,256 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\cryptdll.dll
lsasrv.dll 5.00.2195.2964 492.77 KB (504,592 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\lsasrv.dll
lsass.exe 5.00.2195.2964 32.77 KB (33,552 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\lsass.exe
wmicore.dll 5.00.2195.2842 72.27 KB (74,000 bytes)
5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\system32\wmicore.dll
cfgmgr32.dll 5.00.2134.1 16.77 KB (17,168 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\cfgmgr32.dll
dmserver.dll 2195.2778.297.3 11.77 KB (12,048 bytes) 5/22/2002 9:13:46 PM VERITAS Software Corp.
c:\winnt\system32\dmserver.dll
winsta.dll 5.00.2195.2386 36.77 KB (37,648 bytes)
5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\system32\winsta.dll
eventlog.dll 5.00.2178.1 43.77 KB (44,816 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\eventlog.dll
ntdsapi.dll 5.00.2195.2661 55.77 KB (57,104 bytes)
5/22/2002 9:13:55 PM Microsoft Corporation
c:\winnt\system32\ntdsapi.dll
scesrv.dll 5.00.2195.2780 226.27 KB (231,696 bytes)
5/22/2002 9:13:59 PM Microsoft Corporation
c:\winnt\system32\scesrv.dll
umpnpmgr.dll 5.00.2182.1 86.27 KB (88,336 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\umpnpmgr.dll
services.exe 5.00.2195.2780 86.77 KB (88,848 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\services.exe
clbcatq.dll 2000.2.3471.1 496.77 KB (508,688 bytes)
5/22/2002 9:13:44 PM Microsoft Corporation
c:\winnt\system32\clbcatq.dll
oleaut32.dll 2.40.4517 612.27 KB (626,960 bytes)

12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\oleaut32.dll
cscui.dll 5.00.2195.2959 228.27 KB (233,744 bytes)
5/22/2002 9:13:45 PM Microsoft Corporation
c:\winnt\system32\cscui.dll
winspool.drv 5.00.2195.2780 109.77 KB (112,400 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\winspool.drv
winscard.dll 5.00.2134.1 77.27 KB (79,120 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\winscard.dll
wlnotify.dll 5.00.2195.2780 53.77 KB (55,056 bytes)
5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\system32\wlnotify.dll
cscdll.dll 5.00.2195.2401 98.27 KB (100,624 bytes)
5/22/2002 9:13:45 PM Microsoft Corporation
c:\winnt\system32\cscdll.dll
lz32.dll 5.00.2134.1 9.77 KB (10,000 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\lz32.dll
version.dll 5.00.2134.1 15.77 KB (16,144 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\version.dll
rsaenh.dll 5.00.2195.2228 130.77 KB (133,904 bytes)
5/22/2002 9:14:42 PM Microsoft Corporation
c:\winnt\system32\rsaenh.dll
mscat32.dll 5.131.2134.1 7.77 KB (7,952 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\mscat32.dll
ole32.dll 5.00.2195.2887 969.77 KB (993,040 bytes)
5/22/2002 9:13:57 PM Microsoft Corporation
c:\winnt\system32\ole32.dll
imagehlp.dll 5.00.2195.2778 125.77 KB (128,784 bytes) 5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\imagehlp.dll
msasn1.dll 5.00.2134.1 51.27 KB (52,496 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\msasn1.dll
crypt32.dll 5.131.2195.2833 451.27 KB (462,096 bytes)
5/22/2002 9:13:44 PM Microsoft Corporation
c:\winnt\system32\crypt32.dll
wintrust.dll 5.131.2195.2779 162.27 KB (166,160 bytes)
5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\system32\wintrust.dll
setupapi.dll 5.00.2195.2663 555.77 KB (569,104 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\setupapi.dll
winmm.dll 5.00.2161.1 184.77 KB (189,200 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\winmm.dll
comctl32.dll 5.81 537.77 KB (550,672 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\comctl32.dll
shlwapi.dll 5.00.3315.1000 282.77 KB (289,552 bytes)
5/22/2002 9:14:00 PM Microsoft Corporation
c:\winnt\system32\shlwapi.dll
shell32.dll 5.00.3315.2902 2.25 MB (2,359,056 bytes)
5/22/2002 9:14:00 PM Microsoft Corporation
c:\winnt\system32\shell32.dll
msgina.dll 5.00.2195.2779 324.27 KB (332,048 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\msgina.dll
wsock32.dll 5.00.2195.2871 21.27 KB (21,776 bytes) 5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\system32\wsock32.dll
dnsapi.dll 5.00.2195.2785 130.77 KB (133,904 bytes)
5/22/2002 9:13:46 PM Microsoft Corporation
c:\winnt\system32\dnsapi.dll
wldap32.dll 5.00.2195.2797 125.27 KB (128,272 bytes)
5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\system32\wldap32.dll
ws2help.dll 5.00.2134.1 17.77 KB (18,192 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\ws2help.dll
ws2_32.dll 5.00.2195.2780 67.77 KB (69,392 bytes)
5/22/2002 9:14:03 PM Microsoft Corporation
c:\winnt\system32\ws2_32.dll
samlib.dll 5.00.2195.2780 49.77 KB (50,960 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\samlib.dll
netrap.dll 5.00.2134.1 11.27 KB (11,536 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\netrap.dll
netapi32.dll 5.00.2195.2808 303.77 KB (311,056 bytes) 5/22/2002 9:13:55 PM Microsoft Corporation
c:\winnt\system32\netapi32.dll
profmap.dll 5.00.2181.1 29.27 KB (29,968 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\profmap.dll
secur32.dll 5.00.2195.2862 46.77 KB (47,888 bytes)
5/22/2002 9:13:59 PM Microsoft Corporation
c:\winnt\system32\secur32.dll
sfc.dll 5.00.2195.2896 92.11 KB (94,320 bytes)
5/22/2002 9:13:59 PM Microsoft Corporation
c:\winnt\system32\sfc.dll
nddeapi.dll 5.00.2137.1 15.27 KB (15,632 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\nddeapi.dll
userenv.dll 5.00.2195.2780 361.77 KB (370,448 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\userenv.dll
user32.dll 5.00.2195.2821 392.77 KB (402,192 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\user32.dll
gdi32.dll 5.00.2195.2778 228.77 KB (234,256 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\gdi32.dll
rpcrt4.dll 5.00.2195.2832 437.27 KB (447,760 bytes)
5/22/2002 9:13:59 PM Microsoft Corporation
c:\winnt\system32\rpcrt4.dll
advapi32.dll 5.00.2195.2867 351.77 KB (360,208 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\advapi32.dll
kernel32.dll 5.00.2195.2778 714.77 KB (731,920 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\kernel32.dll
msvcrt.dll 6.10.8924.0 284.05 KB (290,869 bytes)
5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\msvcrt.dll
winlogon.exe 5.00.2195.2953 173.77 KB (177,936 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\winlogon.exe
sfcfiles.dll 5.00.2195.2967 948.27 KB (971,024 bytes)
5/22/2002 9:13:59 PM Microsoft Corporation
c:\winnt\system32\sfcfiles.dll
ntdll.dll 5.00.2195.2779 478.77 KB (490,256 bytes)
5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\ntdll.dll
smss.exe 5.00.2195.2901 44.27 KB (45,328 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\smss.exe

[Services]

Display Name Name State Start Mode Service Type Path Error Control Start Name Tag ID
Alerter Alerter Stopped Disabled Share Process
c:\winnt\system32\services.exe Normal
LocalSystem 0
Application Management AppMgmt Stopped Manual
Share Process c:\winnt\system32\services.exe
Normal LocalSystem 0
Computer Browser Browser Stopped Disabled Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
Indexing Service cisvc Stopped Manual Share
Process c:\winnt\system32\cisvc.exe Normal
LocalSystem 0
ClipBook ClipSrv Stopped Manual Own Process
c:\winnt\system32\clipsrv.exe Normal
LocalSystem 0
Distributed File System Dfs Stopped Disabled
Own Process c:\winnt\system32\dfssvc.exe
Normal LocalSystem 0
DHCP Client Dhcp Stopped Disabled Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
Logical Disk Manager Administrative Service dmadmin Stopped
Manual Share Process
c:\winnt\system32\dmadmin.exe /com Normal
LocalSystem 0
Logical Disk Manager dmserver Running Auto Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
DNS Client Dnscache Stopped Disabled Share Process
c:\winnt\system32\services.exe Normal
LocalSystem 0
Event Log Eventlog Running Auto Share Process
c:\winnt\system32\services.exe Normal
LocalSystem 0
COM+ Event System EventSystem Running Manual
Share Process c:\winnt\system32\svchost.exe -k
netsvcs Normal LocalSystem 0
Fax Service Fax Stopped Manual Own
Process c:\winnt\system32\faxsvc.exe Normal
LocalSystem 0
IBM Netfinity ActivePCI Alert Service IBMHPS Stopped
Disabled Own Process
c:\winnt\system32\ibmhpasv.exe Normal
LocalSystem 0
IIS Admin Service IISADMIN Stopped Disabled Share
Process c:\winnt\system32\inetsrv\inetinfo.exe Normal
LocalSystem 0
Intersite Messaging IsmServ Stopped Disabled Own
Process c:\winnt\system32\ismserv.exe Normal
LocalSystem 0

```
Kerberos Key Distribution Center kdc Stopped Disabled
        Share Process c:\winnt\system32\lsass.exe
        Normal LocalSystem 0
Server lanmanserver Stopped Manual Share
Process c:\winnt\system32\services.exe Normal
        LocalSystem 0
Workstation lanmanworkstation Stopped Manual
        Share Process c:\winnt\system32\services.exe
        Normal LocalSystem 0
License Logging Service LicenseService Stopped
        Disabled Own Process
        c:\winnt\system32\llssrv.exe Normal
        LocalSystem 0
TCP/IP NetBIOS Helper Service LmHosts Stopped Disabled
        Share Process c:\winnt\system32\services.exe
        Normal LocalSystem 0
Messenger Messenger Stopped Manual Share Process
        c:\winnt\system32\services.exe Normal
        LocalSystem 0
NetMeeting Remote Desktop Sharing mnmsrvc Stopped
        Manual Own Process
        c:\winnt\system32\mnmsrvc.exe Normal
        LocalSystem 0
Distributed Transaction Coordinator MSDTC Stopped
        Disabled Own Process
        c:\winnt\system32\msdtc.exe Normal
        LocalSystem 0
Windows Installer MSIServer Stopped Manual Share
Process c:\winnt\system32\msiexec.exe /v Normal
        LocalSystem 0
Microsoft Search MSSEARCH Stopped Disabled
        Share Process "c:\program files\common
files\system\mssearch\bin\mssearch.exe" Normal
        LocalSystem 0
MSSQLSERVER MSSQLSERVER Stopped Manual
        Own Process
        c:\progra~1\micros~3\mssql\binn\sqlservr.exe Normal
        LocalSystem 0
MSSQLServerADHelper MSSQLServerADHelper
        Stopped Manual Own Process c:\program
files\microsoft sql server\80\tools\binn\sqladhlp.exe Normal
        LocalSystem 0
Network DDE NetDDE Stopped Manual Share
Process c:\winnt\system32\netdde.exe Normal
        LocalSystem 0
Network DDE DSDM NetDDEdsdm Stopped Manual
        Share Process c:\winnt\system32\netdde.exe
        Normal LocalSystem 0
Net Logon Netlogon Stopped Manual Share Process
        c:\winnt\system32\lsass.exe Normal
        LocalSystem 0
Network Connections Netman Running Manual Share
Process c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Intel(R) NMS NMSSvc Running Auto Own
Process c:\winnt\system32\nmssvc.exe Normal
        LocalSystem 0
File Replication NtFrs Stopped Manual Own
Process c:\winnt\system32\ntfrs.exe Ignore
        LocalSystem 0
NT LM Security Support Provider NtLmSsp Stopped Disabled
        Share Process c:\winnt\system32\lsass.exe
        Normal LocalSystem 0
Removable Storage NtmsSvc Stopped Disabled Share
Process c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Plug and Play PlugPlay Running Auto Share
Process c:\winnt\system32\services.exe Normal
        LocalSystem 0
IPSEC Policy Agent PolicyAgent Stopped Disabled
        Share Process c:\winnt\system32\lsass.exe
        Normal LocalSystem 0
Protected Storage ProtectedStorage Stopped Disabled
        Share Process c:\winnt\system32\services.exe
        Normal LocalSystem 0
Remote Access Auto Connection Manager RasAuto Stopped
        Manual Share Process
        c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Remote Access Connection Manager RasMan Stopped
        Manual Share Process
        c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Routing and Remote Access RemoteAccess Stopped
        Disabled Share Process
        c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Remote Registry Service RemoteRegistry Stopped
        Disabled Own Process
        c:\winnt\system32\regsvc.exe Normal
        LocalSystem 0
Remote Procedure Call (RPC) Locator RpcLocator
        Stopped Manual Own Process
        c:\winnt\system32\locator.exe Normal
        LocalSystem 0
Remote Procedure Call (RPC) RpcSs Running Auto
        Share Process c:\winnt\system32\svchost -k rpcss
        Normal LocalSystem 0
QoS RSVP RSVP Running Manual Own Process
        c:\winnt\system32\rsvp.exe -s Normal
        LocalSystem 0
Security Accounts Manager SamSs Stopped Disabled
        Share Process c:\winnt\system32\lsass.exe
        Normal LocalSystem 0
Smart Card Helper SCardDrv Stopped Manual Share
Process c:\winnt\system32\scardsvr.exe Ignore
        LocalSystem 0
Smart Card SCardSvr Stopped Manual Share
Process c:\winnt\system32\scardsvr.exe Ignore
        LocalSystem 0
Task Scheduler Schedule Stopped Disabled Share
Process c:\winnt\system32\mstask.exe Normal
        LocalSystem 0
RunAs Service seclogon Stopped Disabled Share
Process c:\winnt\system32\services.exe Ignore
        LocalSystem 0
System Event Notification SENS Stopped Disabled
        Share Process c:\winnt\system32\svchost.exe -k
netsvcs Normal LocalSystem 0
Internet Connection Sharing SharedAccess Stopped
        Manual Share Process
        c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Simple Mail Transport Protocol (SMTP) SMTPSVC Stopped
        Disabled Share Process
        c:\winnt\system32\inetsrv\inetinfo.exe Normal
        LocalSystem 0
Print Spooler Spooler Stopped Disabled Own
Process c:\winnt\system32\spoolsv.exe Normal
        LocalSystem 0
SQLSERVERAGENT SQLSERVERAGENT Stopped Manual
        Own Process
        c:\progra~1\micros~3\mssql\binn\sqlagent.exe Normal
        LocalSystem 0
Performance Logs and Alerts SysmonLog Stopped
        Manual Own Process
        c:\winnt\system32\smlogsvc.exe Normal
        LocalSystem 0
Telephony TapiSrv Stopped Disabled Share Process
        c:\winnt\system32\svchost.exe -k tapisrv Normal
        LocalSystem 0
Terminal Services TermService Stopped Disabled
        Own Process c:\winnt\system32\termsrv.exe
        Normal LocalSystem 0
Telnet TlntSvr Stopped Manual Own Process
        c:\winnt\system32\tlntsvr.exe Normal
        LocalSystem 0
Distributed Link Tracking Server TrkSvr Stopped Manual
        Share Process c:\winnt\system32\services.exe
        Normal LocalSystem 0
Distributed Link Tracking Client TrkWks Stopped Disabled
        Share Process c:\winnt\system32\services.exe
        Normal LocalSystem 0
Uninterruptible Power Supply UPS Stopped Manual
        Own Process c:\winnt\system32\ups.exe
        Normal LocalSystem 0
Utility Manager UtilMan Stopped Manual Own
Process c:\winnt\system32\utilman.exe Normal
        LocalSystem 0
Windows Time W32Time Stopped Manual Share
Process c:\winnt\system32\services.exe Normal
        LocalSystem 0
World Wide Web Publishing Service W3SVC Stopped
        Disabled Share Process
        c:\winnt\system32\inetsrv\inetinfo.exe Normal
        LocalSystem 0
Windows Management Instrumentation WinMgmt Running
        Manual Own Process
        c:\winnt\system32\wbem\winmgmt.exe Ignore
        LocalSystem 0
Windows Management Instrumentation Driver Extensions Wmi
        Running Manual Share Process
        c:\winnt\system32\services.exe Normal
        LocalSystem 0

[Program Groups]

Group Name Name User Name
Accessories Default User:Accessories Default
User
Accessories\Accessibility Default
User:Accessories\Accessibility Default User
Accessories\Entertainment Default
User:Accessories\Entertainment Default User
Accessories\System Tools Default User:Accessories\System
Tools Default User
```

Startup Default User:Startup Default User
Accessories All Users:Accessories All Users
Accessories\Accessibility All
Users:Accessories\Accessibility All Users
Accessories\Communications All
Users:Accessories\Communications All Users
Accessories\Entertainment All
Users:Accessories\Entertainment All Users
Accessories\Games All Users:Accessories\Games All Users
Accessories\Microsoft Script Debugger All
Users:Accessories\Microsoft Script Debugger All Users
Accessories\System Tools All Users:Accessories\System Tools All Users
Administrative Tools All Users:Administrative Tools All Users
Microsoft SQL Server All Users:Microsoft SQL Server All Users
Microsoft SQL Server - Switch All Users:Microsoft SQL Server - Switch All Users
Startup All Users:Startup All Users
Accessories SHASTA\Administrator:Accessories
SHASTA\Administrator
Accessories\Accessibility
SHASTA\Administrator:Accessories\Accessibility
SHASTA\Administrator
Accessories\Entertainment
SHASTA\Administrator:Accessories\Entertainment
SHASTA\Administrator
Accessories\System Tools
SHASTA\Administrator:Accessories\System Tools
SHASTA\Administrator
Startup SHASTA\Administrator:Startup SHASTA\Administrator

[Startup Programs]

Program Command User Name Location
Promon.exe promon.exe All Users
HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run

[OLE Registration]

Object Local Server
Sound (OLE2) sndrec32.exe
Media Clip mplay32.exe
Video Clip mplay32.exe /avi
MIDI Sequence mplay32.exe /mid
Sound Not Available
Media Clip Not Available
Image Document "C:\Program Files\Windows NT\Accessories\ImageVue\KodakImg.exe"
WordPad Document "%ProgramFiles%\Windows NT\Accessories\WORDPAD.EXE"
Windows Media Services DRM Storage object Not Available
Bitmap Image C:\WINNT\System32\mspaint.exe

[Internet Explorer 5]

[Following are sub-categories of this main category]

[Summary]

Item Value
Version 5.00.3315.1000
Build 53315.1000
Product ID 51879-335-1006241-05696
Application Path C:\Program Files\Internet Explorer
Language English (United States)
Active Printer Not Available

Cipher Strength 168-bit
Content Advisor Disabled
IEAK Install No

[File Versions]

File Version Size Date Path Company
advapi32.dll 5.0.2195.2867 352 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
advpack.dll 5.0.3103.1000 87 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
browselc.dll 5.0.3315.2846 35 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
browseui.dll 5.0.3315.2846 789 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
ckcnv.exe 5.0.2189.1 9 KB 12/7/1999 1:00:00 PM C:\WINNT\system32 Microsoft Corporation
comctl32.dll 5.81.3103.1000 538 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
crypt32.dll 5.131.2195.2833 451 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
enhsig.dll <File Missing> Not Available Not Available Not Available Not Available
iemigrat.dll <File Missing> Not Available Not Available Not Available Not Available
iesetup.dll 5.0.3103.1000 57 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
iexplore.exe 5.0.2920.0 59 KB 12/7/1999 1:00:00 PM C:\Program Files\Internet Explorer Microsoft Corporation
imagehlp.dll 5.0.2195.2778 126 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
imghelp.dll <File Missing> Not Available Not Available Not Available Not Available
inseng.dll 5.0.3103.1000 72 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
jobexec.dll 5.0.0.1 47 KB 12/7/1999 1:00:00 PM C:\WINNT\system32 Microsoft Corporation
jscript.dll 5.6.0.6626 576 KB 6/26/2001 6:06:52 PM C:\WINNT\system32 Microsoft Corporation
jsproxy.dll 5.0.2920.0 13 KB 12/7/1999 1:00:00 PM C:\WINNT\system32 Microsoft Corporation
msaahtml.dll <File Missing> Not Available Not Available Not Available Not Available
mshtml.dll 5.0.3315.2870 2290 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
msjava.dll 5.0.3802.0 923 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
msoss.dll <File Missing> Not Available Not Available Not Available Not Available
msxml.dll 8.0.5718.1 493 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
occache.dll 5.0.3103.1000 86 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
ole32.dll 5.0.2195.2887 970 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
oleaut32.dll 2.40.4517.0 612 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
olepro32.dll 5.0.4517.0 160 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
rsabase.dll 5.0.2195.2228 128 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
rsaenh.dll 5.0.2195.2228 131 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
rsapi32.dll <File Missing> Not Available Not Available Not Available Not Available
rsasig.dll <File Missing> Not Available Not Available Not Available Not Available
schannel.dll 5.1.2195.0 138 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
shdoc401.dll <File Missing> Not Available Not Available Not Available Not Available
shdocvw.dll 5.0.3315.2879 1078 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
shell32.dll 5.0.3315.2902 2304 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
shlwapi.dll 5.0.3315.1000 283 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
url.dll 5.0.2920.0 82 KB 12/7/1999 1:00:00 PM C:\WINNT\system32 Microsoft Corporation
urlmon.dll 5.0.3315.1000 441 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
vbscript.dll 5.6.0.6914 472 KB 9/14/2001 3:18:06 PM C:\WINNT\system32 Microsoft Corporation
webcheck.dll 5.0.3315.1000 252 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
win.com 5.0.2134.1 24 KB 12/7/1999 1:00:00 PM C:\WINNT\system32 Microsoft Corporation
wininet.dll 5.0.3315.1000 457 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
winsock.dll 3.10.0.103 3 KB 12/7/1999 1:00:00 PM C:\WINNT\system32 Microsoft Corporation
wintrust.dll 5.131.2195.2779 162 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
wsock.vxd <File Missing> Not Available Not Available Not Available Not Available
wsock32.dll 5.0.2195.2871 21 KB 5/4/2001 12:05:02 PM C:\WINNT\system32 Microsoft Corporation
wsock32n.dll <File Missing> Not Available Not Available Not Available Not Available

[Connectivity]

Item Value
Connection Preference Never dial
EnableHttp1.1 1
ProxyHttp1.1 0

LAN Settings

AutoConfigProxy wininet.dll
AutoProxyDetectMode Enabled
AutoConfigURL
Proxy Disabled
ProxyServer
ProxyOverride

[Cache]

[Following are sub-categories of this main category]

[Summary]

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 4268 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]

Item Value
Content Advisor Disabled

[Personal Certificates]

Issued To Issued By Validity Signature Algorithm
Administrator Administrator 5/22/2002 to 4/28/2102 sha1RSA

[Other People Certificates]

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

[Publishers]

Name
No publisher information available

[Security]

Zone Security Level
Local intranet Medium-low
Trusted sites Low
Internet Medium
Restricted sites High

#
#
disk array controller configuration
#
#
disk configuration controller 0 .. 4
Begin
BeginGroup
PhysicalDevice0 = Channel=0, Target=0, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice1 = Channel=0, Target=1, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice2 = Channel=0, Target=2, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice3 = Channel=0, Target=3, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice4 = Channel=0, Target=4, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice5 = Channel=0, Target=5, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice6 = Channel=0, Target=6, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice7 = Channel=0, Target=8, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice8 = Channel=0, Target=9, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice9 = Channel=0, Target=10, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice10 = Channel=0, Target=11, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice11 = Channel=1, Target=0, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice12 = Channel=1, Target=1, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice13 = Channel=1, Target=2, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice14 = Channel=1, Target=3, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice15 = Channel=1, Target=4, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice16 = Channel=1, Target=5, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice17 = Channel=1, Target=6, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice18 = Channel=1, Target=8, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice19 = Channel=1, Target=9, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice20 = Channel=1, Target=10, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice21 = Channel=1, Target=11, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice22 = Channel=2, Target=0, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice23 = Channel=2, Target=1, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice24 = Channel=2, Target=2, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice25 = Channel=2, Target=3, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice26 = Channel=2, Target=4, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice27 = Channel=2, Target=5, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice28 = Channel=2, Target=6, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice29 = Channel=2, Target=8, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
PhysicalDevice30 = Channel=2, Target=9, Size=17484mb, State=Online, TransferSpeed=80MHz, TransferWidth=16Bit,

```
MaxTag=32;
        PhysicalDevice31 = Channel=2, Target=10,
Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice32 = Channel=2, Target=11,
Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        IntermediateDevice0 = StripeSize=128kb, Raid=0,
WriteThrough=1, Size=192324mb,
                (PhysicalDevice0, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice1, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice2, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice3, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice4, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice5, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice6, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice7, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice8, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice9, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice10, StartAddress=0mb,
Size=17484mb);
        IntermediateDevice1 = StripeSize=128kb, Raid=0,
WriteThrough=1, Size=192324mb,
                (PhysicalDevice11, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice12, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice13, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice14, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice15, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice16, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice17, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice18, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice19, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice20, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice21, StartAddress=0mb,
Size=17484mb);
        IntermediateDevice2 = StripeSize=128kb, Raid=0,
WriteThrough=1, Size=192324mb,
                (PhysicalDevice22, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice23, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice24, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice25, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice26, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice27, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice28, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice29, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice30, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice31, StartAddress=0mb,
Size=17484mb),
                (PhysicalDevice32, StartAddress=0mb,
Size=17484mb);
        LogicalDevice0 = StripeSize=128kb, Raid=12,
WriteThrough=1, Size=576972mb, BIOSGeometry=8GB,
                (IntermediateDevice0, StartAddress=0mb,
Size=192324mb),
                (IntermediateDevice1, StartAddress=0mb,
Size=192324mb),
                (IntermediateDevice2, StartAddress=0mb,
Size=192324mb);
 EndGroup
 BeginControllerParameter
        ControllerName = eXtremeRAID 2000;
        ControllerType = 28;
        FirmwareVersion = 5.60;
        CacheLineSize = 8KB;
        BackgroundTaskRate = 50;
        InitiatorID = 7;
        DiskStartupMode = AutoSpin;
        DevicesPerSpin = 2;
        InitialDelay = 6S;
        SequentialDelay = 0S;
        EnableDriveSizing = 0;
        EnableClustering = 0;
        EnableBGInit = 1;
        EnableReadAhead = 0;
        EnableBiosLoadDelay = 0;
        EnableForcedUnitAccess = 0;
        DisableBios = 1;
        EnableCDROMBoot = 0;
        EnableStorageWorks = 0;
        EnableSAFTE = 1;
        EnableSES = 1;
        EnableARM = 1;
        EnableOFM = 1;
        OEMCode = 0;
        StartupOption = 0;
 EndControllerParameter
End

### disk configuration controller 5 (for DB LOG) ###
Begin
 BeginGroup
        PhysicalDevice0 = Channel=0, Target=0, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice1 = Channel=2, Target=0, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice2 = Channel=0, Target=1, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice3 = Channel=2, Target=1, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice4 = Channel=0, Target=2, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice5 = Channel=2, Target=2, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice6 = Channel=0, Target=3, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice7 = Channel=2, Target=3, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice8 = Channel=0, Target=4, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice9 = Channel=2, Target=4, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice10 = Channel=0, Target=5, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice11 = Channel=2, Target=5, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice12 = Channel=0, Target=6, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        PhysicalDevice13 = Channel=2, Target=6, Size=17480mb,
State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit,
MaxTag=32;
        IntermediateDevice0 = StripeSize=128kb, Raid=1,
WriteThrough=1, Size=17480mb,
                (PhysicalDevice0, StartAddress=0mb,
Size=17480mb),
                (PhysicalDevice1, StartAddress=0mb,
Size=17480mb);
        IntermediateDevice1 = StripeSize=128kb, Raid=1,
WriteThrough=1, Size=17480mb,
```

```
                (PhysicalDevice2, StartAddress=0mb,
Size=17480mb),
                (PhysicalDevice3, StartAddress=0mb,
Size=17480mb);
        IntermediateDevice2 = StripeSize=128kb, Raid=1,
WriteThrough=1, Size=17480mb,
                (PhysicalDevice4, StartAddress=0mb,
Size=17480mb),
                (PhysicalDevice5, StartAddress=0mb,
Size=17480mb);
        IntermediateDevice3 = StripeSize=128kb, Raid=1,
WriteThrough=1, Size=17480mb,
                (PhysicalDevice6, StartAddress=0mb,
Size=17480mb),
                (PhysicalDevice7, StartAddress=0mb,
Size=17480mb);
        IntermediateDevice4 = StripeSize=128kb, Raid=1,
WriteThrough=1, Size=17480mb,
                (PhysicalDevice8, StartAddress=0mb,
Size=17480mb),
                (PhysicalDevice9, StartAddress=0mb,
Size=17480mb);
        IntermediateDevice5 = StripeSize=128kb, Raid=1,
WriteThrough=1, Size=17480mb,
                (PhysicalDevice10, StartAddress=0mb,
Size=17480mb),
                (PhysicalDevice11, StartAddress=0mb,
Size=17480mb);
        IntermediateDevice6 = StripeSize=128kb, Raid=1,
WriteThrough=1, Size=17480mb,
                (PhysicalDevice12, StartAddress=0mb,
Size=17480mb),
                (PhysicalDevice13, StartAddress=0mb,
Size=17480mb);
        LogicalDevice0 = StripeSize=128kb, Raid=12,
WriteThrough=1, Size=122360mb, BIOSGeometry=8GB,
                (IntermediateDevice0, StartAddress=0mb,
Size=34960mb),
                (IntermediateDevice1, StartAddress=0mb,
Size=34960mb),
                (IntermediateDevice2, StartAddress=0mb,
Size=34960mb),
                (IntermediateDevice3, StartAddress=0mb,
Size=34960mb),
                (IntermediateDevice4, StartAddress=0mb,
Size=34960mb),
                (IntermediateDevice5, StartAddress=0mb,
Size=34960mb),
                (IntermediateDevice6, StartAddress=0mb,
Size=34960mb);
 EndGroup
 BeginControllerParameter
        ControllerName = eXtremeRAID 2000;
        ControllerType = 28;
        FirmwareVersion = 5.60;
        CacheLineSize = 8KB;
        BackgroundTaskRate = 50;
        InitiatorID = 7;
        DiskStartupMode = AutoSpin;
        DevicesPerSpin = 2;
        InitialDelay = 6S;
        SequentialDelay = 0S;
        EnableDriveSizing = 0;
        EnableClustering = 0;
        EnableBGInit = 1;
        EnableReadAhead = 0;
        EnableBiosLoadDelay = 0;
        EnableForcedUnitAccess = 0;
        DisableBios = 1;
        EnableCDROMBoot = 0;
        EnableStorageWorks = 0;
        EnableSAFTE = 1;
        EnableSES = 1;
        EnableARM = 1;
        EnableOFM = 1;
        OEMCode = 0;
        StartupOption = 0;
 EndControllerParameter
End
```

<Client Configuration>

COM+ Application Configuration

COM+ Settings (properties of component TPCC.ALLTxns) for 5 frontends

Transactions: not supported

Enable object pooling
- Minimum pool size: 55
- Maximum pool size: 55
- Creation timeout (ms): 60000

Enable object construction
- Constructor string: "dummy string (do not remove)"

Enable just in time activation
Component supports events and statistics

Concurrency: required

TPCC Application Registry

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\TPCC]
"Path"="C:\\Inetpub\\wwwroot\\"
"NumberOfDeliveryThreads"=dword:00000005
"MaxConnections"=dword:000036b0
"MaxPendingDeliveries"=dword:000007d0
"DB_Protocol"="DBLIB"
"TxnMonitor"="COM"
"DbServer"="shasta"
"DbName"="tpcc"
"DbUser"="sa"
"DbPassword"=""
"COM_SinglePool"="YES"
```

InetInfo Registry

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetI
nfo]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetI
nfo\Parameters]
"ListenBackLog"=dword:00000032
"DispatchEntries"=hex(7):4c,00,44,00,41,00,50,00,53,00,56,00,43,00,
00,00,53,00,\

4d,00,54,00,50,00,53,00,56,00,43,00,00,00,4e,00,4e,00,54,00,50,00,5
3,00,56,\
  00,43,00,00,00,00,00
"PoolThreadLimit"=dword:000003fe
"ThreadTimeout"=dword:00015180

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetI
nfo\Performance]
"Library"="infoctrs.dll"
"Open"="OpenINFOPerformanceData"
"Close"="CloseINFOPerformanceData"
"Collect"="CollectINFOPerformanceData"
"Last Counter"=dword:000008e4
"Last Help"=dword:000008e5
"First Counter"=dword:000008a4
"First Help"=dword:000008a5
"Library Validation
Code"=hex:c6,da,8d,b9,1b,f7,c1,01,10,25,00,00,00,00,00,00
"WbemAdapFileTime"=hex:00,c3,bb,02,47,d4,c0,01
"WbemAdapFileSize"=dword:00002510
"WbemAdapStatus"=dword:00000000
```

WWW Service Registry

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3
SVC]
"Type"=dword:00000020
"Start"=dword:00000002
"ErrorControl"=dword:00000001
"ImagePath"=hex(2):43,00,3a,00,5c,00,57,00,49,00,4e,00,4e,00,54,00
,5c,00,53,00,\

79,00,73,00,74,00,65,00,6d,00,33,00,32,00,5c,00,69,00,6e,00,65,00,7
4,00,73,\

00,72,00,76,00,5c,00,69,00,6e,00,65,00,74,00,69,00,6e,00,66,00,6f,0
0,2e,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,00,49,0
0,4e,00,00,00,\
  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\W3
SVC\ASP]
"NOTE"="This is for backward compatibility only."

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3
SVC\ASP\Parameters]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3
SVC\Parameters]
```

"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\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch\AdvancedDataFactory]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch\RDSServer.DataFactory]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Script Map]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Virtual Roots]
"/"="c:\\inetpub\\wwwroot,,205"
"/Scripts"="c:\\inetpub\\scripts,,204"
"/IISHelp"="c:\\winnt\\help\\iishelp,,201"
"/IISAdmin"="C:\\WINNT\\System32\\inetsrv\\iisadmin,,201"
"/IISSamples"="c:\\inetpub\\iissamples,,201"
"/MSADC"="c:\\program files\\common files\\system\\msadc,,205"
"/Printers"="C:\\WINNT\\web\\printers,,201"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Performance]
"Library"="w3ctrs.dll"
"Open"="OpenW3PerformanceData"
"Close"="CloseW3PerformanceData"
"Collect"="CollectW3PerformanceData"
"Last Counter"=dword:00000988
"Last Help"=dword:00000989
"First Counter"=dword:000008e6
"First Help"=dword:000008e7
"Library Validation Code"=hex:96,fb,c7,c0,1b,f7,c1,01,10,3d,00,00,00,00,00,00
"WbemAdapFileTime"=hex:00,c3,bb,02,47,d4,c0,01
"WbemAdapFileSize"=dword:00001d10
"WbemAdapStatus"=dword:00000000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Security]
"Security"=hex:01,00,14,80,a0,00,00,00,ac,00,00,00,14,00,00,00,30,00,00,00,02,\

00,1c,00,01,00,00,00,02,80,14,00,ff,01,0f,00,01,01,00,00,00,00,00,01,00,00,\

00,00,02,00,70,00,04,00,00,00,00,00,18,00,fd,01,02,00,01,01,00,00,00,00,\

05,12,00,00,00,20,15,10,00,00,00,1c,00,ff,01,0f,00,01,02,00,00,00,00,00,05,\

20,00,00,00,20,02,00,00,00,00,00,00,00,00,18,00,8d,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,\

00,05,20,00,00,00,23,02,00,00,00,00,00,00,01,01,00,00,00,00,00,05,12,00,00,\
00,01,01,00,00,00,00,00,05,12,00,00,00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Enum]
"0"="Root\\LEGACY_W3SVC\\0000"
"Count"=dword:00000001
"NextInstance"=dword:00000001

System Information

System Information report written at: 06/09/2002 10:29:06 PM
[System Information]

[Following are sub-categories of this main category]

[System Summary]

Item	Value
OS Name	Microsoft Windows 2000 Server
Version	5.0.2195 Service Pack 2 Build 2195
OS Manufacturer	Microsoft Corporation
System Name	CL01
System Manufacturer	NEC
System Model	Express5800/120Lf [N8100-748]
System Type	X86-based PC
Processor	x86 Family 6 Model 8 Stepping 10 GenuineIntel ~995 Mhz
Processor	x86 Family 6 Model 8 Stepping 10 GenuineIntel ~995 Mhz
BIOS Version	SDS2 BIOS Release 0.10
Windows Directory	C:\WINNT
System Directory	C:\WINNT\System32
Boot Device	\Device\Harddisk0\Partition1
Locale	United States
User Name	CL01\Administrator
Time Zone	Pacific Daylight Time
Total Physical Memory	1,047,852 KB
Available Physical Memory	893,704 KB
Total Virtual Memory	3,570,616 KB
Available Virtual Memory	3,354,900 KB
Page File Space	2,522,764 KB
Page File	C:\pagefile.sys

[Hardware Resources]

[Following are sub-categories of this main category]

[Conflicts/Sharing]

Resource	Device
IRQ 10	Standard OpenHCD USB Host Controller
IRQ 10	PCI standard host CPU bridge

[DMA]

Channel	Device	Status
4	Direct memory access controller	OK
1	ECP Printer Port (LPT1)	OK
2	Standard floppy disk controller	OK

[Forced Hardware]

Device PNP Device ID
No Forced Hardware

[I/O]

Address Range	Device	Status
0x0000-0x0CF7	PCI bus	OK
0x0000-0x0CF7	Direct memory access controller	OK
0x0D00-0x0FFF	PCI bus	OK
0x2000-0x2497	PCI bus	OK
0x2000-0x2497	ATI Technologies Inc. RAGE XL PCI	OK
0x03B0-0x03BB	ATI Technologies Inc. RAGE XL PCI	OK
0x03C0-0x03DF	ATI Technologies Inc. RAGE XL PCI	OK
0x2400-0x243F	Intel 8255x-based PCI Ethernet Adapter (10/100)	OK
0x2440-0x247F	Intel 8255x-based PCI Ethernet Adapter (10/100) #2	OK
0x0A79-0x0A79	ISAPNP Read Data Port	OK
0x0279-0x0279	ISAPNP Read Data Port	OK
0x02F4-0x02F7	ISAPNP Read Data Port	OK
0x0060-0x0060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	OK
0x0064-0x0064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	OK
0x0070-0x0071	System CMOS/real time clock	OK
0x0010-0x001F	Direct memory access controller	OK
0x0080-0x008F	Direct memory access controller	OK
0x00C0-0x00DF	Direct memory access controller	OK
0x0020-0x0021	Programmable interrupt controller	OK
0x00A0-0x00A1	Programmable interrupt controller	OK
0x00A0-0x00A1	ISA Plug and Play bus	OK
0x0040-0x0043	System timer	OK
0x00F0-0x00FF	Numeric data processor	OK
0x0061-0x0061	System speaker	OK
0x002E-0x002F	Motherboard resources	OK
0x0540-0x055F	Motherboard resources	OK
0x0560-0x0563	Motherboard resources	OK
0x0564-0x0567	Motherboard resources	OK
0x0568-0x056F	Motherboard resources	OK
0x00E0-0x00FF	Motherboard resources	OK
0x0600-0x061F	Motherboard resources	OK
0x0580-0x058D	Motherboard resources	OK
0x0092-0x0092	Motherboard resources	OK
0x0B04-0x0B04	Motherboard resources	OK
0x0419-0x041B	Motherboard resources	OK
0x041D-0x041F	Motherboard resources	OK
0x04D0-0x04D1	Motherboard resources	OK
0x04D6-0x04D6	Motherboard resources	OK
0x0C00-0x0C01	Motherboard resources	OK
0x0C06-0x0C08	Motherboard resources	OK
0x0C14-0x0C14	Motherboard resources	OK
0x0C49-0x0C4A	Motherboard resources	OK
0x0C50-0x0C51	Motherboard resources	OK
0x0C52-0x0C52	Motherboard resources	OK

0x0C6C-0x0C6C Motherboard resources OK
0x0C6F-0x0C6F Motherboard resources OK
0x0CD6-0x0CD7 Motherboard resources OK
0x0F50-0x0F58 Motherboard resources OK
0x0374-0x0375 Motherboard resources OK
0xFE00-0xFE20 Motherboard resources OK
0x0220-0x0220 Motherboard resources OK
0x0225-0x0225 Motherboard resources OK
0x0228-0x0228 Motherboard resources OK
0x022A-0x022E Motherboard resources OK
0x0102-0x0105 Motherboard resources OK
0x0107-0x0107 Motherboard resources OK
0x03F8-0x03FF Communications Port (COM1) OK
0x02F8-0x02FF Communications Port (COM2) OK
0x0378-0x037F ECP Printer Port (LPT1) OK
0x0778-0x077F ECP Printer Port (LPT1) OK
0x03F0-0x03F5 Standard floppy disk controller OK
0x03F7-0x03F7 Standard floppy disk controller OK
0x0CA6-0x0CA6 Microsoft ACPI-Compliant Embedded Controller OK
0x0CA7-0x0CA7 Microsoft ACPI-Compliant Embedded Controller OK
0x2480-0x248F Standard Dual Channel PCI IDE Controller OK
0x2490-0x2493 Standard Dual Channel PCI IDE Controller OK
0x01F0-0x01F7 Primary IDE Channel OK
0x03F6-0x03F6 Primary IDE Channel OK
0x0170-0x0177 Secondary IDE Channel OK
0x0376-0x0376 Secondary IDE Channel OK
0x2800-0x2CFF PCI bus OK
0x2800-0x2CFF Adaptec AIC-7899 Ultra160/m PCI SCSI Card OK
0x2C00-0x2CFF Adaptec AIC-7899 Ultra160/m PCI SCSI Card OK

[IRQs]

IRQ Number Device
9 Microsoft ACPI-Compliant System
20 ATI Technologies Inc. RAGE XL PCI
18 Intel 8255x-based PCI Ethernet Adapter (10/100)
19 Intel 8255x-based PCI Ethernet Adapter (10/100) #2
1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
12 PS/2 Compatible Mouse
8 System CMOS/real time clock
13 Numeric data processor
4 Communications Port (COM1)
3 Communications Port (COM2)
6 Standard floppy disk controller
15 Secondary IDE Channel
10 Standard OpenHCD USB Host Controller
10 PCI standard host CPU bridge
16 Adaptec AIC-7899 Ultra160/m PCI SCSI Card
17 Adaptec AIC-7899 Ultra160/m PCI SCSI Card

[Memory]

Range Device Status
0xA0000-0xBFFFF PCI bus OK
0xA0000-0xBFFFF ATI Technologies Inc. RAGE XL PCI OK
0xC0000-0xC3FFF PCI bus OK
0xC4000-0xC7FFF PCI bus OK
0xC8000-0xCBFFF PCI bus OK
0xCC000-0xCFFFF PCI bus OK
0xD0000-0xD3FFF PCI bus OK
0xD4000-0xD7FFF PCI bus OK
0xD8000-0xDBFFF PCI bus OK
0xDC000-0xDFFFF PCI bus OK
0xE0000-0xFFFFF PCI bus OK
0xFC000000-0xFDFFFFFF PCI bus OK
0xFC000000-0xFDFFFFFF Intel 8255x-based PCI Ethernet Adapter (10/100) OK
0xFD000000-0xFDFFFFFF ATI Technologies Inc. RAGE XL PCI OK
0xFC040000-0xFC040FFF ATI Technologies Inc. RAGE XL PCI OK
0xFC041000-0xFC041FFF Intel 8255x-based PCI Ethernet Adapter (10/100) OK
0xFC042000-0xFC042FFF Intel 8255x-based PCI Ethernet Adapter (10/100) #2 OK
0xFC020000-0xFC03FFFF Intel 8255x-based PCI Ethernet Adapter (10/100) #2 OK
0xFC043000-0xFC043FFF Standard OpenHCD USB Host Controller OK
0xFE000000-0xFE3FFFFF PCI bus OK
0xFE000000-0xFE3FFFFF Adaptec AIC-7899 Ultra160/m PCI SCSI Card OK
0xFE001000-0xFE001FFF Adaptec AIC-7899 Ultra160/m PCI SCSI Card OK

[Components]

[Following are sub-categories of this main category]

[Multimedia]

[Following are sub-categories of this main category]

[Audio Codecs]

Codec Manufacturer Description Status File
Version Size Creation Date
c:\winnt\system32\iac25_32.ax Intel Corporation Indeo® audio software OK
C:\WINNT\System32\IAC25_32.AX 2.05.53
195.00 KB (199,680 bytes) 12/7/1999 12:00:00 PM
c:\winnt\system32\msg723.acm Microsoft Corporation
OK C:\WINNT\System32\MSG723.ACM
4.4.3385 106.77 KB (109,328 bytes) 5/8/2002 10:14:26 PM
c:\winnt\system32\lhacm.acm Microsoft Corporation
OK C:\WINNT\System32\LHACM.ACM
4.4.3385 33.27 KB (34,064 bytes) 5/8/2002 10:14:27 PM
c:\winnt\system32\tssoft32.acm DSP GROUP, INC.
OK C:\WINNT\System32\TSSOFT32.ACM
1.01 9.27 KB (9,488 bytes) 12/7/1999 12:00:00 PM
c:\winnt\system32\msgsm32.acm Microsoft Corporation
OK C:\WINNT\System32\MSGSM32.ACM
5.00.2134.1 22.27 KB (22,800 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\msg711.acm Microsoft Corporation
OK C:\WINNT\System32\MSG711.ACM
5.00.2134.1 10.27 KB (10,512 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\msadp32.acm Microsoft Corporation
OK C:\WINNT\System32\MSADP32.ACM
5.00.2134.1 14.77 KB (15,120 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\imaadp32.acm Microsoft Corporation
OK C:\WINNT\System32\IMAADP32.ACM
5.00.2134.1 16.27 KB (16,656 bytes)
12/7/1999 12:00:00 PM

[Video Codecs]

Codec Manufacturer Description Status File
Version Size Creation Date
c:\winnt\system32\ir50_32.dll Intel Corporation Indeo® video 5.10 OK C:\WINNT\System32\IR50_32.DLL
R.5.10.15.2.55 737.50 KB (755,200 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\msh261.drv Microsoft Corporation
OK C:\WINNT\System32\MSH261.DRV
4.4.3385 163.77 KB (167,696 bytes) 5/8/2002 10:14:26 PM
c:\winnt\system32\msh263.drv Microsoft Corporation
OK C:\WINNT\System32\MSH263.DRV
4.4.3385 252.27 KB (258,320 bytes) 5/8/2002 10:13:58 PM
c:\winnt\system32\iccvid.dll Radius Inc. OK
C:\WINNT\System32\ICCVID.DLL 1.10.0.6 108.00 KB (110,592 bytes) 12/7/1999 12:00:00 PM
c:\winnt\system32\msrle32.dll Microsoft Corporation
OK C:\WINNT\System32\MSRLE32.DLL
5.00.2134.1 10.77 KB (11,024 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\msvidc32.dll Microsoft Corporation
OK C:\WINNT\System32\MSVIDC32.DLL
5.00.2134.1 27.27 KB (27,920 bytes)
12/7/1999 12:00:00 PM
c:\winnt\system32\ir32_32.dll Intel(R) Corporation
OK C:\WINNT\System32\IR32_32.DLL Not Available 194.50 KB (199,168 bytes) 12/7/1999 12:00:00 PM

[CD-ROM]

Item Value
Drive D:
Description CD-ROM Drive
Media Loaded False
Media Type CD-ROM
Name MATSHITA CD-ROM CR-177
Manufacturer (Standard CD-ROM drives)
Status OK
Transfer Rate Not Available
SCSI Target ID 0
PNP Device ID IDE\CDROMMATSHITA_CD-ROM_CR-177_____7N05____\5&8B19DAD&0&0.0.0

[Sound Device]

Item Value

No sound devices

[Display]

Item Value
Name ATI Technologies Inc. RAGE XL PCI
PNP Device ID PCI\VEN_1002&DEV_4752&SUBSYS_81351033&REV_27\3&267A616A&0&10
Adapter Type ATI RAGE XL PCI, ATI Technologies Inc. compatible
Adapter Description ATI Technologies Inc. RAGE XL PCI
Adapter RAM 4.00 MB (4,194,304 bytes)
Installed Drivers atidrab.dll
Driver Version 5.00.2179.1
INF File display.inf (atirage3 section)
Color Planes 1
Color Table Entries 4294967296
Resolution 1024 x 768 x 60 hertz
Bits/Pixel 32

[Infrared]

Item Value
No infrared devices

[Input]

[Following are sub-categories of this main category]

[Keyboard]

Item Value
Description Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
Name Enhanced (101- or 102-key)
Layout 00000409
PNP Device ID ACPI\PNP0303\4&32BA4B66&0
NumberOfFunctionKeys 12

[Pointing Device]

Item Value
Hardware Type PS/2 Compatible Mouse
Number of Buttons 2
Status OK
PNP Device ID ACPI\PNP0F13\4&32BA4B66&0
Power Management Supported False
Double Click Threshold 6
Handedness Right Handed Operation

[Modem]

Item Value
No modems

[Network]

[Following are sub-categories of this main category]

[Adapter]

Item Value
Name [00000000] RAS Async Adapter
Adapter Type Not Available
Product Name RAS Async Adapter
Installed True
PNP Device ID Not Available
Last Reset 6/7/2002 1:14:30 AM
Index 0
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Not Available

Name [00000001] WAN Miniport (L2TP)
Adapter Type Not Available
Product Name WAN Miniport (L2TP)
Installed True
PNP Device ID ROOT\MS_L2TPMINIPORT\0000
Last Reset 6/7/2002 1:14:30 AM
Index 1
Service Name Rasl2tp
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Rasl2tp
Driver c:\winnt\system32\drivers\rasl2tp.sys (50800, 5.00.2179.1)

Name [00000002] WAN Miniport (PPTP)
Adapter Type Wide Area Network (WAN)
Product Name WAN Miniport (PPTP)
Installed True
PNP Device ID ROOT\MS_PPTPMINIPORT\0000
Last Reset 6/7/2002 1:14:30 AM
Index 2
Service Name PptpMiniport
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 50:50:54:50:30:30
Service Name PptpMiniport
Driver c:\winnt\system32\drivers\raspptp.sys (47856, 5.00.2160.1)

Name [00000003] Direct Parallel
Adapter Type Not Available
Product Name Direct Parallel
Installed True
PNP Device ID ROOT\MS_PTIMINIPORT\0000
Last Reset 6/7/2002 1:14:30 AM
Index 3
Service Name Raspti
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Raspti
Driver c:\winnt\system32\drivers\raspti.sys (16880, 5.00.2146.1)

Name [00000004] WAN Miniport (IP)
Adapter Type Not Available
Product Name WAN Miniport (IP)
Installed True
PNP Device ID ROOT\MS_NDISWANIP\0000
Last Reset 6/7/2002 1:14:30 AM
Index 4
Service Name NdisWan
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name NdisWan
Driver c:\winnt\system32\drivers\ndiswan.sys (90096, 5.00.2195.2779)

Name [00000005] Intel 8255x-based PCI Ethernet Adapter (10/100)
Adapter Type Ethernet 802.3
Product Name Intel 8255x-based PCI Ethernet Adapter (10/100)
Installed True
PNP Device ID PCI\VEN_8086&DEV_1229&SUBSYS_81351033&REV_0D\3&267A616A&0&18
Last Reset 6/7/2002 1:14:30 AM
Index 5
Service Name E100B
IP Address 10.1.1.1
IP Subnet 255.255.255.0
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:00:4C:0F:7F:69
Service Name E100B
IRQ Number 18
I/O Port 0x2400-0x243F
Driver c:\winnt\system32\drivers\e100bnt5.sys (119056, 5.40.17.0000)

Name [00000006] Intel 8255x-based PCI Ethernet Adapter (10/100)
Adapter Type Ethernet 802.3
Product Name Intel 8255x-based PCI Ethernet Adapter (10/100)
Installed True
PNP Device ID PCI\VEN_8086&DEV_1229&SUBSYS_81351033&REV_0D\3&267A616A&0&20
Last Reset 6/7/2002 1:14:30 AM
Index 6
Service Name E100B
IP Address 10.1.10.250
IP Subnet 255.255.255.0
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:00:4C:0F:7F:6A
Service Name E100B
IRQ Number 19
I/O Port 0x2440-0x247F
Driver c:\winnt\system32\drivers\e100bnt5.sys (119056, 5.40.17.0000)

[Protocol]

Item Value
Name MSAFD Tcpip [TCP/IP]
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 16 bytes
MaximumMessageSize0 bytes
MessageOriented False
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData True
SupportsGracefulClosing True
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD Tcpip [UDP/IP]
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 16 bytes
MaximumMessageSize65467 bytes
MessageOriented True
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting True

Name RSVP UDP Service Provider
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 16 bytes
MaximumMessageSize65467 bytes
MessageOriented True
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption True
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting True

Name RSVP TCP Service Provider
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 16 bytes
MaximumMessageSize0 bytes
MessageOriented False
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption True
SupportsExpeditedData True
SupportsGracefulClosing True
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D99BF95D-0A5E-4B64-A29D-E2B0E9DCE30B}] SEQPACKET 3
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{D99BF95D-0A5E-4B64-A29D-E2B0E9DCE30B}] DATAGRAM 3
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{0CF9B0A4-2F2A-49ED-8C3A-00571A419B68}] SEQPACKET 0
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{0CF9B0A4-2F2A-49ED-8C3A-00571A419B68}] DATAGRAM 0
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{DBD1E8BA-7CE3-44A9-A4D9-0E9BB550F55F}] SEQPACKET 1
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize64000 bytes

MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{DBD1E8BA-7CE3-44A9-A4D9-0E9BB550F55F}] DATAGRAM 1
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4CB3FC50-E5CD-46BB-AA31-9FCC4B2572AB}] SEQPACKET 2
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4CB3FC50-E5CD-46BB-AA31-9FCC4B2572AB}] DATAGRAM 2
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

[WinSock]

Item Value
File c:\winnt\system32\winsock.dll
Version 3.10
Size 2.80 KB (2,864 bytes)

File c:\winnt\system32\wsock32.dll
Version 5.00.2195.2871
Size 21.27 KB (21,776 bytes)

[Ports]

[Following are sub-categories of this main category]

[Serial]

Item Value
Name COM1
Status OK
PNP Device ID ACPI\PNP0501\1
Maximum Input Buffer Size 0
Maximum Output Buffer Size False
Settable Baud Rate True
Settable Data Bits True
Settable Flow Control True
Settable Parity True
Settable Parity Check True
Settable Stop Bits True
Settable RLSD True
Supports RLSD True
Supports 16 Bit Mode False
Supports Special Characters False
Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy 0
Abort Read/Write on Error 0
Binary Mode Enabled -1
Continue XMit on XOff 0
CTS Outflow Control 0
Discard NULL Bytes 0
DSR Outflow Control 0
DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0
Error Replacement Enabled 0
Event Character 0
Parity Check Enabled 0
RTS Flow Control Type Enable
XOff Character 19
XOffXMit Threshold 512
XOn Character 17
XOnXMit Threshold 2048
XOnXOff InFlow Control 0
XOnXOff OutFlow Control 0
IRQ Number 4
I/O Port 0x03F8-0x03FF
Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

Name COM2
Status OK
PNP Device ID ACPI\PNP0501\2
Maximum Input Buffer Size 0
Maximum Output Buffer Size False
Settable Baud Rate True
Settable Data Bits True
Settable Flow Control True
Settable Parity True
Settable Parity Check True
Settable Stop Bits True
Settable RLSD True
Supports RLSD True
Supports 16 Bit Mode False
Supports Special Characters False
Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy 0
Abort Read/Write on Error 0
Binary Mode Enabled -1
Continue XMit on XOff 0
CTS Outflow Control 0
Discard NULL Bytes 0
DSR Outflow Control 0
DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0
Error Replacement Enabled 0
Event Character 0
Parity Check Enabled 0
RTS Flow Control Type Enable
XOff Character 19
XOffXMit Threshold 512
XOn Character 17
XOnXMit Threshold 2048
XOnXOff InFlow Control 0
XOnXOff OutFlow Control 0
IRQ Number 3
I/O Port 0x02F8-0x02FF
Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

[Parallel]

Item Value
Name LPT1
PNP Device ID ACPI\PNP0401\4&32BA4B66&0

[Storage]

[Following are sub-categories of this main category]

[Drives]

Item Value
Drive A:
Description 3 1/2 Inch Floppy Drive

Drive C:
Description Local Fixed Disk
Compressed False
File System NTFS
Size 8.46 GB (9,088,901,120 bytes)
Free Space 5.82 GB (6,252,679,168 bytes)
Volume Name
Volume Serial Number 047AA188
Partition Disk #0, Partition #0
Partition Size 8.46 GB (9,088,902,144 bytes)
Starting Offset 32256 bytes
Drive Description Disk drive
Drive Manufacturer (Standard disk drives)
Drive Model SEAGATE ST39102LC SCSI Disk Device
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 1
Drive SCSIBus 0
Drive SCSILogicalUnit 0
Drive SCSIPort 2
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 9097159680 bytes
Drive TotalCylinders 1106
Drive TotalSectors 17767890
Drive TotalTracks 282030
Drive TracksPerCylinder 255

Drive E:
Description Network Connection
Provider Name \\rte01\c$

Drive F:
Description Network Connection
Provider Name \\10.1.1.1\c$

[SCSI]

Item Value
Name Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Caption Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Driver adpu160m
Status OK
PNP Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81351033&REV_01\3&1070020&0&20
Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81351033&REV_01\3&1070020&0&20
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 16
I/O Port 0x2800-0x2CFF
Driver c:\winnt\system32\drivers\adpu160m.sys (64432, v3.10a)

Name Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Caption Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Driver adpu160m
Status OK
PNP Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81351033&REV_01\3&1070020&0&21
Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81351033&REV_01\3&1070020&0&21
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 17
I/O Port 0x2C00-0x2CFF
Driver c:\winnt\system32\drivers\adpu160m.sys (64432, v3.10a)

[Printing]

Name Port Name Server Name
No printing information

[Problem Devices]

Device PNP Device ID Error Code
No Problem Devices

[USB]

Device PNP Device ID
Standard OpenHCD USB Host Controller
PCI\VEN_1166&DEV_0220&SUBSYS_81351033&REV_05\3&267A616A&0&7A
USB Root Hub USB\ROOT_HUB\4&CE8866E&0

[Software Environment]

[Following are sub-categories of this main category]

[Drivers]

Name	Description	File	Type	Started	Start Mode
	State	Status	Error Control		Accept
Pause	Accept Stop				
abiosdsk	Abiosdsk	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Ignore
	False	False			
abp480n5	abp480n5	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
acpi	Microsoft ACPI Driver	c:\winnt\system32\drivers\acpi.sys			
	Kernel Driver	True	Boot	Running	
	OK	Normal	False	True	
acpiec	Microsoft Embedded Controller Driver				
	c:\winnt\system32\drivers\acpiec.sys				Kernel
Driver	True	Boot	Running	OK	Normal
	False	True			
adpu160m	adpu160m	c:\winnt\system32\drivers\adpu160m.sys			
	Kernel Driver	True	Boot	Running	
	OK	Normal	False	True	
afd	AFD Networking Support Environment				
	c:\winnt\system32\drivers\afd.sys	Kernel Driver			
	True	Auto	Running	OK	Normal
	False	True			
aha154x	Aha154x	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
aic116x	aic116x	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
aic78u2	aic78u2	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
aic78xx	aic78xx	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
ami0nt	ami0nt	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
amsint	amsint	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
asc	asc	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
asc3350p	asc3350p	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
asc3550	asc3550	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Normal
	False	False			
asyncmac	RAS Asynchronous Media Driver				
	c:\winnt\system32\drivers\asyncmac.sys				Kernel
Driver	False	Manual	Stopped	OK	Normal
	False	False			
atapi	Standard IDE/ESDI Hard Disk Controller				
	c:\winnt\system32\drivers\atapi.sys	Kernel Driver			
	True	Boot	Running	OK	Normal
	False	True			
atdisk	Atdisk	Not Available		Kernel Driver	
	False	Disabled	Stopped	OK	Ignore
	False	False			
atirage3	atirage3	c:\winnt\system32\drivers\atimpab.sys			
	Kernel Driver	True	Manual	Running	
	OK	Ignore	False	True	
atmarpc	ATM ARP Client Protocol				
	c:\winnt\system32\drivers\atmarpc.sys				Kernel
Driver	False	Manual	Stopped	OK	Normal
	False	False			
audstub	Audio Stub Driver				
	c:\winnt\system32\drivers\audstub.sys				Kernel
Driver	True	Manual	Running	OK	Normal
	False	True			
beep	Beep	c:\winnt\system32\drivers\beep.sys			
	Kernel Driver	True	System	Running	
	OK	Normal	False	True	

```
buslogic  BusLogic  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
cd20xrnt  cd20xrnt  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
cdaudio   Cdaudio   c:\winnt\system32\drivers\cdaudio.sys
          Kernel Driver            False    System   Stopped
          OK        Ignore         False    False
cdfs      Cdfs      c:\winnt\system32\drivers\cdfs.sys  File
System Driver       True           Disabled Running  OK
          Normal    False          True
cdrom     CD-ROM Driver
          c:\winnt\system32\drivers\cdrom.sys          Kernel
Driver    True      System         Running  OK       Normal
          False     True
changer   Changer   Not Available  Kernel Driver
          False     System         Stopped  OK       Ignore
          False     False
cpqarray  Cpqarray  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
cpqarry2  cpqarry2  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
cpqfcalm  cpqfcalm  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
cpqfws2e  cpqfws2e  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
dac960nt  dac960nt  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
deckzpsx  deckzpsx  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
dfsdriver DfsDriver c:\winnt\system32\drivers\dfs.sys  File
System Driver       True           Boot     Running  OK
          Normal    False          True
disk      Disk Driver c:\winnt\system32\drivers\disk.sys  Kernel
Driver    True      Boot           Running  OK       Normal
          False     True
diskperf  Diskperf  c:\winnt\system32\drivers\diskperf.sys
          Kernel Driver            True     Boot     Running
          OK        Normal         False    True
dmboot    dmboot    c:\winnt\system32\drivers\dmboot.sys
          Kernel Driver            False    Disabled Stopped
          OK        Normal         False    False
dmio      Logical Disk Manager Driver
          c:\winnt\system32\drivers\dmio.sys           Kernel
Driver    True      Boot           Running  OK       Normal
          False     True
dmload    dmload    c:\winnt\system32\drivers\dmload.sys
          Kernel Driver            True     Boot     Running
          OK        Normal         False    True
e100b     Intel(R) PRO Adapter Driver
          c:\winnt\system32\drivers\e100bnt5.sys       Kernel
Driver    True      Manual         Running  OK       Normal
          False     True
efs       EFS       c:\winnt\system32\drivers\efs.sys  File
System Driver       True           Disabled Running  OK
          Normal    False          True
fastfat   Fastfat   c:\winnt\system32\drivers\fastfat.sys
          File System Driver       True     Disabled Running
          OK        Normal         False    True
fd16_700  Fd16_700  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
fdc       Floppy Disk Controller Driver
          c:\winnt\system32\drivers\fdc.sys  Kernel Driver
          True      Manual         Running  OK       Normal
          False     True
fips      Fips      c:\winnt\system32\drivers\fips.sys  Kernel
Driver    True      Auto           Running  OK       Normal
          False     True
fireport  fireport  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
flashpnt  flashpnt  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
flpydisk  Floppy Disk Driver
          c:\winnt\system32\drivers\flpydisk.sys       Kernel
Driver    True      Manual         Running  OK       Normal
          False     True
ftdisk    Volume Manager Driver
          c:\winnt\system32\drivers\ftdisk.sys         Kernel
Driver    True      Boot           Running  OK       Normal
          False     True
gpc       Generic Packet Classifier
          c:\winnt\system32\drivers\msgpc.sys          Kernel
Driver    True      Manual         Running  OK       Normal
          False     True
i8042prt  i8042 Keyboard and PS/2 Mouse Port Driver
          c:\winnt\system32\drivers\i8042prt.sys       Kernel
Driver    True      System         Running  OK       Normal
          False     True
ini910u   ini910u   Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
intelide  IntelIde  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
ipfilterdriver      IP Traffic Filter Driver
          c:\winnt\system32\drivers\ipfltdrv.sys       Kernel
Driver    False     Manual         Stopped  OK       Normal
          False     False
ipinip    IP in IP Tunnel Driver
          c:\winnt\system32\drivers\ipinip.sys         Kernel
Driver    False     Manual         Stopped  OK       Normal
          False     False
ipnat     IP Network Address Translator
          c:\winnt\system32\drivers\ipnat.sys  Kernel Driver
          False     Manual         Stopped  OK       Normal
          False     False
ipsec     IPSEC driver
          c:\winnt\system32\drivers\ipsec.sys          Kernel
Driver    True      Manual         Running  OK       Normal
          False     True
ipsraidn  ipsraidn  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
isapnp    PnP ISA/EISA Bus Driver
          c:\winnt\system32\drivers\isapnp.sys         Kernel
Driver    True      Boot           Running  OK       Critical
          False     True
kbdclass  Keyboard Class Driver
          c:\winnt\system32\drivers\kbdclass.sys       Kernel
Driver    True      System         Running  OK       Normal
          False     True
ksecdd    KSecDD    c:\winnt\system32\drivers\ksecdd.sys
          Kernel Driver            True     Boot     Running
          OK        Normal         False    True
lbrtfdc   lbrtfdc   Not Available  Kernel Driver
          False     System         Stopped  OK       Ignore
          False     False
lp6nds35  lp6nds35  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
mnmdd     mnmdd     c:\winnt\system32\drivers\mnmdd.sys
          Kernel Driver            True     System   Running
          OK        Ignore         False    True
modem     Modem     c:\winnt\system32\drivers\modem.sys
          Kernel Driver            False    Manual   Stopped
          OK        Ignore         False    False
mouclass  Mouse Class Driver
          c:\winnt\system32\drivers\mouclass.sys       Kernel
Driver    True      System         Running  OK       Normal
          False     True
mountmgr  MountMgr  c:\winnt\system32\drivers\mountmgr.sys
          Kernel Driver            True     Boot     Running
          OK        Normal         False    True
mraid35x  mraid35x  Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
mrxsmb    MRXSMB    c:\winnt\system32\drivers\mrxsmb.sys
          File System Driver       True     System   Running
          OK        Normal         False    True
msfs      Msfs      c:\winnt\system32\drivers\msfs.sys  File
System Driver       True           System   Running  OK
          Normal    False          True
mskssrv   Microsoft Streaming Service Proxy
          c:\winnt\system32\drivers\mskssrv.sys        Kernel
Driver    False     Manual         Stopped  OK       Normal
          False     False
mspclock  Microsoft Streaming Clock Proxy
          c:\winnt\system32\drivers\mspclock.sys       Kernel
Driver    False     Manual         Stopped  OK       Normal
          False     False
mspqm     Microsoft Streaming Quality Manager Proxy
          c:\winnt\system32\drivers\mspqm.sys          Kernel
Driver    False     Manual         Stopped  OK       Normal
          False     False
mup       Mup       c:\winnt\system32\drivers\mup.sys  File
System Driver       True           Boot     Running  OK
          Normal    False          True
ncrc710   Ncrc710   Not Available  Kernel Driver
          False     Disabled       Stopped  OK       Normal
          False     False
ndis      NDIS System Driver  c:\winnt\system32\drivers\ndis.sys
          Kernel Driver            True     Boot     Running
          OK        Normal         False    True
ndistapi  Remote Access NDIS TAPI Driver
          c:\winnt\system32\drivers\ndistapi.sys       Kernel
Driver    True      Manual         Running  OK       Normal
```

```
        False   True
ndiswan Remote Access NDIS WAN Driver
        c:\winnt\system32\drivers\ndiswan.sys            Kernel
Driver  True    Manual  Running OK      Normal
        False   True
ndproxy NDIS Proxyc:\winnt\system32\drivers\ndproxy.sys
        Kernel Driver           True    Manual  Running
        OK      Normal  False   True
netbios NetBIOS Interface
        c:\winnt\system32\drivers\netbios.sys            File
System Driver           True    System  Running OK
        Normal  False   True
netbt   NetBios over Tcpip      c:\winnt\system32\drivers\netbt.sys
        Kernel Driver           True    System  Running
        OK      Normal  False   True
netdetect NetDetect     c:\winnt\system32\drivers\netdtect.sys
        Kernel Driver           False   Manual  Stopped
        OK      Normal  False   False
npfs    Npfs    c:\winnt\system32\drivers\npfs.sys File
System Driver           True    System  Running OK
        Normal  False   True
ntfs    Ntfs    c:\winnt\system32\drivers\ntfs.sys File
System Driver           True    Disabled Running OK
        Normal  False   True
null    Null    c:\winnt\system32\drivers\null.sys Kernel
Driver  True    System  Running OK      Normal
        False   True
nwlnkflt IPX Traffic Filter Driver
        c:\winnt\system32\drivers\nwlnkflt.sys           Kernel
Driver  False   Manual  Stopped OK      Normal
        False   False
nwlnkfwd IPX Traffic Forwarder Driver
        c:\winnt\system32\drivers\nwlnkfwd.sys           Kernel
Driver  False   Manual  Stopped OK      Normal
        False   False
openhci Microsoft USB Open Host Controller Driver
        c:\winnt\system32\drivers\openhci.sys            Kernel
Driver  True    Manual  Running OK      Normal
        False   True
parallel Parallel class driver
        c:\winnt\system32\drivers\parallel.sys           Kernel
Driver  True    Manual  Running OK      Normal
        False   True
parport Parallel port driver
        c:\winnt\system32\drivers\parport.sys            Kernel
Driver  True    System  Running OK      Ignore
        False   True
partmgr PartMgr c:\winnt\system32\drivers\partmgr.sys
        Kernel Driver           True    Boot    Running
        OK      Normal  False   True
parvdm  ParVdm  c:\winnt\system32\drivers\parvdm.sys
        Kernel Driver           True    Auto    Running
        OK      Ignore  False   True
pci     PCI Bus Driver          c:\winnt\system32\drivers\pci.sys
        Kernel Driver           True    Boot    Running
        OK      Critical False  True
pcidump PCIDump Not Available           Kernel Driver
        False   System  Stopped OK      Ignore
        False   False
pciide  PCIIde  c:\winnt\system32\drivers\pciide.sys
        Kernel Driver           True    Boot    Running
        OK      Normal  False   True
pcmcia  Pcmcia  c:\winnt\system32\drivers\pcmcia.sys
        Kernel Driver           False   Disabled Stopped
        OK      Normal  False   False
pdcomp  PDCOMP  Not Available           Kernel Driver
        False   Manual  Stopped OK      Ignore
        False   False
pdframe PDFRAME Not Available           Kernel Driver
        False   Manual  Stopped OK      Ignore
        False   False
pdreli  PDRELI  Not Available           Kernel Driver
        False   Manual  Stopped OK      Ignore
        False   False
pdrframe PDRFRAME       Not Available   Kernel
Driver  False   Manual  Stopped OK      Ignore
        False   False
pptpminiport    WAN Miniport (PPTP)
        c:\winnt\system32\drivers\raspptp.sys            Kernel
Driver  True    Manual  Running OK      Normal
        False   True
ptilink Direct Parallel Link Driver
        c:\winnt\system32\drivers\ptilink.sys            Kernel
Driver  True    Manual  Running OK      Normal
        False   True
ql1080  ql1080  Not Available           Kernel Driver
        False   Disabled Stopped OK     Normal
        False   False
ql10wnt Ql10wnt Not Available           Kernel Driver
        False   Disabled Stopped OK     Normal
        False   False
ql1240  ql1240  Not Available           Kernel Driver
        False   Disabled Stopped OK     Normal
        False   False
ql2100  ql2100  Not Available           Kernel Driver
        False   Disabled Stopped OK     Normal
        False   False
rasacd  Remote Access Auto Connection Driver
        c:\winnt\system32\drivers\rasacd.sys             Kernel
Driver  True    System  Running OK      Normal
        False   True
rasl2tp WAN Miniport (L2TP)
        c:\winnt\system32\drivers\rasl2tp.sys            Kernel
Driver  True    Manual  Running OK      Normal
        False   True
raspti  Direct Parallel
        c:\winnt\system32\drivers\raspti.sys             Kernel
Driver  True    Manual  Running OK      Normal
        False   True
rca     Microsoft Streaming Network Raw Channel Access
        c:\winnt\system32\drivers\rca.sys Kernel Driver
        False   Manual  Stopped OK      Normal
        False   False
rdbss   Rdbss   c:\winnt\system32\drivers\rdbss.sys
        File System Driver      True    System  Running
        OK      Normal  False   True
rdpwd   RDPWD   c:\winnt\system32\drivers\rdpwd.sys
        Kernel Driver           False   Manual  Stopped
        OK      Ignore  False   False
redbook Digital CD Audio Playback Filter Driver
        c:\winnt\system32\drivers\redbook.sys            Kernel
Driver  False   System  Stopped OK      Normal
        False   False
serenum Serenum Filter Driver
        c:\winnt\system32\drivers\serenum.sys            Kernel
Driver  True    Manual  Running OK      Normal
        False   True
serial  Serial port driver
        c:\winnt\system32\drivers\serial.sys             Kernel
Driver  True    System  Running OK      Ignore
        False   True
sfloppy Sfloppy c:\winnt\system32\drivers\sfloppy.sys
        Kernel Driver           False   System  Stopped
        OK      Ignore  False   False
sglfb   sglfb   Not Available           Kernel Driver
        False   System  Stopped OK      Normal
        False   False
simbad  Simbad  Not Available           Kernel Driver
        False   Disabled Stopped OK     Normal
        False   False
sparrow Sparrow Not Available           Kernel Driver
        False   Disabled Stopped OK     Normal
        False   False
spud    Special Purpose Utility Driver
        c:\winnt\system32\drivers\spud.sys Kernel Driver
        True    Manual  Running OK      Normal
        False   True
srv     Srv     c:\winnt\system32\drivers\srv.sys File
System Driver           True    Manual  Running OK
        Normal  False   True
swenum  Software Bus Driver
        c:\winnt\system32\drivers\swenum.sys             Kernel
Driver  True    Manual  Running OK      Normal
        False   True
symc810 symc810 Not Available           Kernel Driver
        False   Disabled Stopped OK     Normal
        False   False
symc8xx symc8xx Not Available           Kernel Driver
        False   Disabled Stopped OK     Normal
        False   False
sym_hi  sym_hi  Not Available           Kernel Driver
        False   Disabled Stopped OK     Normal
        False   False
tcpip   TCP/IP Protocol Driver c:\winnt\system32\drivers\tcpip.sys
        Kernel Driver           True    System  Running
        OK      Normal  False   True
tdasync TDASYNC c:\winnt\system32\drivers\tdasync.sys
        Kernel Driver           False   Manual  Stopped
        OK      Ignore  False   False
tdipx   TDIPX   c:\winnt\system32\drivers\tdipx.sys Kernel
Driver  False   Manual  Stopped OK      Ignore
        False   False
tdnetb  TDNETB  c:\winnt\system32\drivers\tdnetb.sys
        Kernel Driver           False   Manual  Stopped
        OK      Ignore  False   False
tdpipe  TDPIPE  c:\winnt\system32\drivers\tdpipe.sys
        Kernel Driver           False   Manual  Stopped
        OK      Ignore  False   False
tdspx   TDSPX   c:\winnt\system32\drivers\tdspx.sys
        Kernel Driver           False   Manual  Stopped
        OK      Ignore  False   False
tdtcp   TDTCP   c:\winnt\system32\drivers\tdtcp.sys Kernel
Driver  False   Manual  Stopped OK      Ignore
        False   False
termdd  Terminal Device Driver
        c:\winnt\system32\drivers\termdd.sys             Kernel
```

```
Driver          False   Disabled        Stopped OK      Normal
                False   False
tga             tga     Not Available           Kernel Driver
                False   System  Stopped OK      Ignore
                False   False
udfs            Udfs    c:\winnt\system32\drivers\udfs.sys      File
System Driver           False   Disabled        Stopped OK
                Normal  False   False
ultra66         ultra66 Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
update          Microcode Update Driver
                c:\winnt\system32\drivers\update.sys            Kernel
Driver          True    Manual  Running OK      Normal
                False   True
usbhub          Microsoft USB Standard Hub Driver
                c:\winnt\system32\drivers\usbhub.sys            Kernel
Driver          True    Manual  Running OK      Normal
                False   True
vgasave         VgaSave c:\winnt\system32\drivers\vga.sys       Kernel
Driver          True    System  Running OK      Ignore
                False   True
wanarp          Remote Access IP ARP Driver
                c:\winnt\system32\drivers\wanarp.sys            Kernel
Driver          True    Manual  Running OK      Normal
                False   True
wdica           WDICA   Not Available           Kernel Driver
                False   Manual  Stopped OK      Ignore
                False   False

[Environment Variables]

Variable        Value   User Name
ComSpec         %SystemRoot%\system32\cmd.exe
                <SYSTEM>
Os2LibPath              %SystemRoot%\system32\os2\dll;
                <SYSTEM>
Path
                %SystemRoot%\system32;%SystemRoot%;%SystemRoot
%\System32\Wbem;C:\Program Files\Microsoft SQL
Server\80\Tools\BINN    <SYSTEM>
windir          %SystemRoot%    <SYSTEM>
OS              Windows_NT      <SYSTEM>
PROCESSOR_ARCHITECTURE  x86     <SYSTEM>
PROCESSOR_LEVEL 6       <SYSTEM>
PROCESSOR_IDENTIFIER    x86 Family 6 Model 8 Stepping 10,
GenuineIntel            <SYSTEM>
PROCESSOR_REVISION      080a    <SYSTEM>
NUMBER_OF_PROCESSORS    2       <SYSTEM>
PATHEXT         .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH
                <SYSTEM>
TEMP            %SystemRoot%\TEMP<SYSTEM>
TMP             %SystemRoot%\TEMP<SYSTEM>
TEMP            %USERPROFILE%\Local Settings\Temp
                CL01\Administrator
TMP             %USERPROFILE%\Local Settings\Temp
                CL01\Administrator

[Jobs]

[ Following are sub-categories of this main category ]

[Print]

Document        Size    Owner   Notify  Status  Time
Submitted       Start Time      Until Time      Elapsed Time    Pages
Printed         Job ID  Priority        Parameters      Driver
Name            Print Processor         Host Print Queue        Data Type
                Name
No print jobs

[Network Connections]

Local Name              Remote Name             Type    Status
                User Name
E:              \\rte01\c$      Disk    OK      CL01\Administrator
F:              \\10.1.1.1\c$   Disk    OK
                CL01\Administrator

[Running Tasks]

Name            Path    Process ID      Priority        Min Working Set
                Max Working Set         Start Time      Version Size
                File Date
system idle process     Not Available   0       0
                Not Available   Not Available   Not
Available       Unknown Unknown Unknown
system          Not Available   8       8       0
                1413120 Not Available   Unknown Unknown
                Unknown
smss.exe        c:\winnt\system32\smss.exe       164     11
                204800  1413120 6/7/2002 8:14:49 AM
                5.00.2195.2901          44.27 KB (45,328 bytes)
                12/7/1999 12:00:00 PM
csrss.exe       Not Available   188     13      Not
Available       Not Available   6/7/2002 8:14:52 AM     Unknown
                Unknown Unknown
winlogon.exe    c:\winnt\system32\winlogon.exe   184
                13      204800  1413120 6/7/2002 8:14:53 AM
                5.00.2195.2953          173.77 KB (177,936 bytes)
                12/7/1999 12:00:00 PM
services.exe    c:\winnt\system32\services.exe   236
                9       204800  1413120 6/7/2002 8:14:54 AM
                5.00.2195.2780          86.77 KB (88,848 bytes)
                12/7/1999 12:00:00 PM
lsass.exe       c:\winnt\system32\lsass.exe      248     9
                204800  1413120 6/7/2002 8:14:54 AM
                5.00.2195.2964          32.77 KB (33,552 bytes)
                12/7/1999 12:00:00 PM
svchost.exe     c:\winnt\system32\svchost.exe    424
                8       204800  1413120 6/7/2002 8:14:58 AM
                5.00.2134.1             7.77 KB (7,952 bytes)   12/7/1999
12:00:00 PM
spoolsv.exe     c:\winnt\system32\spoolsv.exe    448
                8       204800  1413120 6/7/2002 8:14:58 AM
                5.00.2161.1             43.77 KB (44,816 bytes)
                5/9/2002 7:04:37 AM
msdtc.exe       c:\winnt\system32\msdtc.exe      476     8
                204800  1413120 6/7/2002 8:14:58 AM
                1999.9.3421.3           6.77 KB (6,928 bytes)   5/9/2002
7:12:24 AM
svchost.exe     c:\winnt\system32\svchost.exe    604
                8       204800  1413120 6/7/2002 8:15:00 AM
                5.00.2134.1             7.77 KB (7,952 bytes)   12/7/1999
12:00:00 PM
llssrv.exe      c:\winnt\system32\llssrv.exe     632     9
                204800  1413120 6/7/2002 8:15:00 AM
                5.00.2195.2649          114.27 KB (117,008 bytes)
                5/3/2001 8:05:02 PM
regsvc.exe      c:\winnt\system32\regsvc.exe     680     8
                204800  1413120 6/7/2002 8:15:01 AM
                5.00.2195.2104          65.27 KB (66,832 bytes)
                5/8/2002 10:46:32 PM
mstask.exe      c:\winnt\system32\mstask.exe     692     8
                204800  1413120 6/7/2002 8:15:01 AM
                4.71.2195.1             115.27 KB (118,032 bytes)
                5/8/2002 10:46:27 PM
winmgmt.exe     c:\winnt\system32\wbem\winmgmt.exe
                796     8       204800  1413120 6/7/2002
8:15:04 AM      1.50.1085.0029          192.08 KB (196,685 bytes)
                5/8/2002 10:46:40 PM
inetinfo.exe    c:\winnt\system32\inetsrv\inetinfo.exe           836
                8       204800  1413120 6/7/2002 8:15:05 AM
                5.00.0984       14.27 KB (14,608 bytes)         5/8/2002
10:47:21 PM
dfssvc.exe      c:\winnt\system32\dfssvc.exe     340     8
                204800  1413120 6/7/2002 8:15:10 AM
                5.00.2195.2841          88.27 KB (90,384 bytes)
                5/8/2002 10:46:18 PM
svchost.exe     c:\winnt\system32\svchost.exe    964
                8       204800  1413120 6/7/2002 8:15:32 AM
                5.00.2134.1             7.77 KB (7,952 bytes)   12/7/1999
12:00:00 PM
explorer.exe    c:\winnt\explorer.exe    1156    8
                204800  1413120 6/7/2002 8:29:19 AM
                5.00.3315.2846          237.27 KB (242,960 bytes)
                5/8/2002 10:46:37 PM
cmd.exe         c:\winnt\system32\cmd.exe        976     8
                204800  1413120 6/7/2002 8:29:29 AM
                5.00.2195.2104          230.77 KB (236,304 bytes)
                12/7/1999 12:00:00 PM
mmc.exe         c:\winnt\system32\mmc.exe        1088    8
                204800  1413120 6/9/2002 10:28:08 PM
                5.00.2195.2301          589.27 KB (603,408 bytes)
                5/8/2002 10:46:23 PM
rsvp.exe        c:\winnt\system32\rsvp.exe       1252    8
                204800  1413120 6/9/2002 10:28:50 PM
                5.00.2167.1             172.77 KB (176,912 bytes)
                12/7/1999 12:00:00 PM

[Loaded Modules]

Name            Version Size    File Date       Manufacturer
                Path
traffic.dll     5.00.2139.1     30.77 KB (31,504 bytes)
                12/7/1999 12:00:00 PM   Microsoft Corporation
                c:\winnt\system32\traffic.dll
rsvp.exe        5.00.2167.1     172.77 KB (176,912 bytes)
                12/7/1999 12:00:00 PM   Microsoft Corporation
                c:\winnt\system32\rsvp.exe
wbemprox.dll    1.50.1085.0045  40.08 KB (41,040
bytes)          5/8/2002 10:46:40 PM    Microsoft Corporation
                c:\winnt\system32\wbem\wbemprox.dll
mlang.dll       5.00.3103.1000  510.77 KB (523,024 bytes)
```

5/8/2002 10:46:23 PM Microsoft Corporation c:\winnt\system32\mlang.dll
cabinet.dll 5.00.2147.1 54.77 KB (56,080 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\cabinet.dll
msinfo32.dll 5.00.2177.1 312.27 KB (319,760 bytes) 5/8/2002 10:14:22 PM Microsoft Corporation c:\program files\common files\microsoft shared\msinfo\msinfo32.dll
mmcndmgr.dll 5.00.2178.1 815.27 KB (834,832 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\mmcndmgr.dll
mmc.exe 5.00.2195.2301 589.27 KB (603,408 bytes) 5/8/2002 10:46:23 PM Microsoft Corporation c:\winnt\system32\mmc.exe
cmd.exe 5.00.2195.2104 230.77 KB (236,304 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\cmd.exe
faxshell.dll 5.00.2134.1 8.27 KB (8,464 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\faxshell.dll
msacm32.dll 5.00.2134.1 65.27 KB (66,832 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\msacm32.dll
avifil32.dll 5.00.2134.1 76.27 KB (78,096 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\avifil32.dll
msvfw32.dll 5.00.2134.1 113.77 KB (116,496 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\msvfw32.dll
docprop2.dll 5.00.2178.1 297.77 KB (304,912 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\docprop2.dll
shdoclc.dll 5.00.3315.2879 324.50 KB (332,288 bytes) 5/8/2002 10:46:33 PM Microsoft Corporation c:\winnt\system32\shdoclc.dll
urlmon.dll 5.00.3315.1000 441.27 KB (451,856 bytes) 5/8/2002 10:46:35 PM Microsoft Corporation c:\winnt\system32\urlmon.dll
browselc.dll 5.00.3315.2846 34.50 KB (35,328 bytes) 5/8/2002 10:46:15 PM Microsoft Corporation c:\winnt\system32\browselc.dll
msi.dll 1.11.2405.0 1.69 MB (1,767,184 bytes) 5/8/2002 10:46:25 PM Microsoft Corporation c:\winnt\system32\msi.dll
wininet.dll 5.00.3315.1000 456.77 KB (467,728 bytes) 5/8/2002 10:46:36 PM Microsoft Corporation c:\winnt\system32\wininet.dll
linkinfo.dll 5.00.2134.1 15.77 KB (16,144 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\linkinfo.dll
powrprof.dll 5.00.3103.1000 13.27 KB (13,584 bytes) 5/8/2002 10:46:31 PM Microsoft Corporation c:\winnt\system32\powrprof.dll
batmeter.dll 5.00.3103.1000 20.27 KB (20,752 bytes) 5/8/2002 10:46:15 PM Microsoft Corporation c:\winnt\system32\batmeter.dll
stobject.dll 5.00.2195.2780 79.27 KB (81,168 bytes) 5/8/2002 10:46:35 PM Microsoft Corporation c:\winnt\system32\stobject.dll
webcheck.dll 5.00.3315.1000 251.77 KB (257,808 bytes) 5/8/2002 10:46:36 PM Microsoft Corporation c:\winnt\system32\webcheck.dll
ntshrui.dll 5.00.2134.1 46.77 KB (47,888 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\ntshrui.dll
mydocs.dll 5.00.2920.0000 55.77 KB (57,104 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\mydocs.dll
browseui.dll 5.00.3315.2846 788.77 KB (807,696 bytes) 5/8/2002 10:46:15 PM Microsoft Corporation c:\winnt\system32\browseui.dll
shdocvw.dll 5.00.3315.2879 1.05 MB (1,104,144 bytes) 5/8/2002 10:46:33 PM Microsoft Corporation c:\winnt\system32\shdocvw.dll
explorer.exe 5.00.3315.2846 237.27 KB (242,960 bytes) 5/8/2002 10:46:37 PM Microsoft Corporation c:\winnt\explorer.exe
tapisrv.dll 5.00.2195.2955 169.27 KB (173,328 bytes) 5/8/2002 10:46:35 PM Microsoft Corporation c:\winnt\system32\tapisrv.dll
dfssvc.exe 5.00.2195.2841 88.27 KB (90,384 bytes) 5/8/2002 10:46:18 PM Microsoft Corporation c:\winnt\system32\dfssvc.exe
iislog.dll 5.00.0984 75.27 KB (77,072 bytes) 5/8/2002 10:47:21 PM Microsoft Corporation c:\winnt\system32\inetsrv\iislog.dll
httpext.dll 0.9.3940.21 435.27 KB (445,712 bytes) 5/8/2002 10:47:21 PM Microsoft Corporation c:\winnt\system32\inetsrv\httpext.dll
md5filt.dll 5.00.0984 32.77 KB (33,552 bytes) 5/8/2002 10:47:22 PM Microsoft Corporation c:\winnt\system32\inetsrv\md5filt.dll
gzip.dll 5.00.0984 30.27 KB (30,992 bytes) 5/8/2002 10:47:21 PM Microsoft Corporation c:\winnt\system32\inetsrv\gzip.dll
compfilt.dll 5.00.0984 22.77 KB (23,312 bytes) 5/8/2002 10:47:20 PM Microsoft Corporation c:\winnt\system32\inetsrv\compfilt.dll
sspifilt.dll 5.00.0984 43.27 KB (44,304 bytes) 5/8/2002 10:47:23 PM Microsoft Corporation c:\winnt\system32\inetsrv\sspifilt.dll
iscomlog.dll 5.00.0984 24.77 KB (25,360 bytes) 5/8/2002 10:47:22 PM Microsoft Corporation c:\winnt\system32\inetsrv\iscomlog.dll
lonsint.dll 5.00.0984 11.77 KB (12,048 bytes) 5/8/2002 10:47:22 PM Microsoft Corporation c:\winnt\system32\inetsrv\lonsint.dll
inetsloc.dll 5.00.0984 20.27 KB (20,752 bytes) 5/8/2002 10:46:21 PM Microsoft Corporation c:\winnt\system32\inetsloc.dll
iisfecnv.dll 5.00.0984 7.27 KB (7,440 bytes) 5/8/2002 10:38:21 PM Microsoft Corporation c:\winnt\system32\inetsrv\iisfecnv.dll
isatq.dll 5.00.0984 60.27 KB (61,712 bytes) 5/8/2002 10:47:22 PM Microsoft Corporation c:\winnt\system32\inetsrv\isatq.dll
infocomm.dll 5.00.0984 238.27 KB (243,984 bytes) 5/8/2002 10:47:21 PM Microsoft Corporation c:\winnt\system32\inetsrv\infocomm.dll
w3svc.dll 5.00.0984 343.27 KB (351,504 bytes) 5/8/2002 10:47:23 PM Microsoft Corporation c:\winnt\system32\inetsrv\w3svc.dll
security.dll 5.00.2154.1 5.77 KB (5,904 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\security.dll
svcext.dll 5.00.0984 39.77 KB (40,720 bytes) 5/8/2002 10:47:23 PM Microsoft Corporation c:\winnt\system32\inetsrv\svcext.dll
admexs.dll 5.00.0984 27.77 KB (28,432 bytes) 5/8/2002 10:47:20 PM Microsoft Corporation c:\winnt\system32\inetsrv\admexs.dll
wamreg.dll 5.00.0984 45.77 KB (46,864 bytes) 5/8/2002 10:47:23 PM Microsoft Corporation c:\winnt\system32\inetsrv\wamreg.dll
metadata.dll 5.00.0984 68.77 KB (70,416 bytes) 5/8/2002 10:47:22 PM Microsoft Corporation c:\winnt\system32\inetsrv\metadata.dll
iismap.dll 5.00.0984 55.77 KB (57,104 bytes) 5/8/2002 10:46:21 PM Microsoft Corporation c:\winnt\system32\iismap.dll
nsepm.dll 5.00.0984 43.27 KB (44,304 bytes) 5/8/2002 10:47:22 PM Microsoft Corporation c:\winnt\system32\inetsrv\nsepm.dll
admwprox.dll 5.00.0984 31.77 KB (32,528 bytes) 5/8/2002 10:38:25 PM Microsoft Corporation c:\winnt\system32\admwprox.dll
coadmin.dll 5.00.0984 39.27 KB (40,208 bytes) 5/8/2002 10:47:20 PM Microsoft Corporation c:\winnt\system32\inetsrv\coadmin.dll
iisadmin.dll 5.00.0984 15.27 KB (15,632 bytes) 5/8/2002 10:47:21 PM Microsoft Corporation c:\winnt\system32\inetsrv\iisadmin.dll
rpcref.dll 5.00.0984 4.27 KB (4,368 bytes) 5/8/2002 10:47:22 PM Microsoft Corporation c:\winnt\system32\inetsrv\rpcref.dll
iisrtl.dll 5.00.0984 119.77 KB (122,640 bytes) 5/8/2002 10:46:21 PM Microsoft Corporation c:\winnt\system32\iisrtl.dll
inetinfo.exe 5.00.0984 14.27 KB (14,608 bytes) 5/8/2002 10:47:21 PM Microsoft Corporation c:\winnt\system32\inetsrv\inetinfo.exe
wshnetbs.dll 5.00.2134.1 7.77 KB (7,952 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\wshnetbs.dll
ntmarta.dll 5.00.2195.2862 98.77 KB (101,136 bytes) 5/8/2002 10:46:29 PM Microsoft Corporation c:\winnt\system32\ntmarta.dll
perfos.dll 5.00.2155.1 21.27 KB (21,776 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\perfos.dll
provthrd.dll 1.50.1085.0000 68.07 KB (69,708 bytes) 5/8/2002 10:14:13 PM Microsoft Corporation c:\winnt\system32\wbem\provthrd.dll
ntevt.dll 1.50.1085.0000 192.06 KB (196,669 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\wbem\ntevt.dll
psapi.dll 5.00.2134.1 28.27 KB (28,944 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\psapi.dll
framedyn.dll 1.50.1085.0000 164.05 KB (167,992 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\wbem\framedyn.dll
cimwin32.dll 1.50.1085.0038 1.02 MB (1,073,232 bytes) 5/8/2002 10:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\cimwin32.dll
wbemsvc.dll 1.50.1085.0007 40.07 KB (41,036 bytes) 5/8/2002 10:46:40 PM Microsoft Corporation

c:\winnt\system32\wbem\wbemsvc.dll
wbemess.dll 1.50.1085.0039 364.07 KB (372,804 bytes) 5/8/2002 10:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\wbemess.dll
fastprox.dll 1.50.1085.0037 144.08 KB (147,536 bytes) 5/8/2002 10:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\fastprox.dll
wbemcore.dll 1.50.1085.0036 628.07 KB (643,140 bytes) 5/8/2002 10:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\wbemcore.dll
wbemcomn.dll 1.50.1085.0021 692.07 KB (708,675 bytes) 5/8/2002 10:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\wbemcomn.dll
winmgmt.exe 1.50.1085.0029 192.08 KB (196,685 bytes) 5/8/2002 10:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\winmgmt.exe
msidle.dll 5.00.2920.0000 6.27 KB (6,416 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\msidle.dll
mstask.exe 4.71.2195.1 115.27 KB (118,032 bytes) 5/8/2002 10:46:27 PM Microsoft Corporation c:\winnt\system32\mstask.exe
regsvc.exe 5.00.2195.2104 65.27 KB (66,832 bytes) 5/8/2002 10:46:32 PM Microsoft Corporation c:\winnt\system32\regsvc.exe
llsrpc.dll 5.00.2149.1 45.77 KB (46,864 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\llsrpc.dll
llssrv.exe 5.00.2195.2649 114.27 KB (117,008 bytes) 5/3/2001 8:05:02 PM Microsoft Corporation c:\winnt\system32\llssrv.exe
wmi.dll 5.00.2191.1 6.27 KB (6,416 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\wmi.dll
netshell.dll 5.00.2195.2779 457.27 KB (468,240 bytes) 5/8/2002 10:46:29 PM Microsoft Corporation c:\winnt\system32\netshell.dll
netman.dll 5.00.2195.2779 89.27 KB (91,408 bytes) 5/8/2002 10:46:28 PM Microsoft Corporation c:\winnt\system32\netman.dll
ntmsdba.dll 5.00.2195.2779 167.27 KB (171,280 bytes) 5/8/2002 10:46:30 PM Microsoft Corporation c:\winnt\system32\ntmsdba.dll
rasdlg.dll 5.00.2195.2671 514.27 KB (526,608 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\rasdlg.dll
netcfgx.dll 5.00.2195.2228 534.77 KB (547,600 bytes) 5/8/2002 10:46:28 PM Microsoft Corporation c:\winnt\system32\netcfgx.dll
rasmans.dll 5.00.2195.2728 147.27 KB (150,800 bytes) 5/8/2002 10:46:32 PM Microsoft Corporation c:\winnt\system32\rasmans.dll
sens.dll 5.00.2163.1 36.77 KB (37,648 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\sens.dll
ntmssvc.dll 5.00.2195.2779 391.27 KB (400,656 bytes) 5/8/2002 10:46:30 PM Microsoft Corporation c:\winnt\system32\ntmssvc.dll
es.dll 2000.2.3471.1 222.27 KB (227,600 bytes) 5/8/2002 10:46:19 PM Microsoft Corporation c:\winnt\system32\es.dll
mtxoci.dll 2000.2.3471.1 101.77 KB (104,208 bytes) 5/8/2002 10:46:28 PM Microsoft Corporation c:\winnt\system32\mtxoci.dll
resutils.dll 5.00.2195.2787 39.77 KB (40,720 bytes) 5/8/2002 10:46:32 PM Microsoft Corporation c:\winnt\system32\resutils.dll
clusapi.dll 5.00.2195.2104 54.27 KB (55,568 bytes) 5/8/2002 10:46:17 PM Microsoft Corporation c:\winnt\system32\clusapi.dll
msvcp50.dll 5.00.7051 552.50 KB (565,760 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\msvcp50.dll
xolehlp.dll 1999.9.3421.3 17.27 KB (17,680 bytes) 5/9/2002 7:12:25 AM Microsoft Corporation c:\winnt\system32\xolehlp.dll
msdtclog.dll 1999.9.3421.3 89.77 KB (91,920 bytes) 5/9/2002 7:12:24 AM Microsoft Corporation c:\winnt\system32\msdtclog.dll
mtxclu.dll 2000.2.3471.1 51.27 KB (52,496 bytes) 5/8/2002 10:46:28 PM Microsoft Corporation c:\winnt\system32\mtxclu.dll
msdtcprx.dll 2000.2.3471.1 665.77 KB (681,744 bytes) 5/8/2002 10:46:24 PM Microsoft Corporation c:\winnt\system32\msdtcprx.dll
txfaux.dll 2000.2.3471.1 374.27 KB (383,248 bytes) 5/8/2002 10:46:35 PM Microsoft Corporation c:\winnt\system32\txfaux.dll
msdtctm.dll 2000.2.3471.1 1.07 MB (1,120,528 bytes) 5/8/2002 10:46:24 PM Microsoft Corporation c:\winnt\system32\msdtctm.dll
msdtc.exe 1999.9.3421.3 6.77 KB (6,928 bytes) 5/9/2002 7:12:24 AM Microsoft Corporation c:\winnt\system32\msdtc.exe
inetpp.dll 5.00.2195.2842 65.27 KB (66,832 bytes) 5/8/2002 10:46:21 PM Microsoft Corporation c:\winnt\system32\inetpp.dll
win32spl.dll 5.00.2195.2780 92.27 KB (94,480 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\win32spl.dll
usbmon.dll 5.00.2195.2780 11.27 KB (11,536 bytes) 5/8/2002 10:46:35 PM Microsoft Corporation c:\winnt\system32\usbmon.dll
tcpmon.dll 5.00.2195.2780 40.77 KB (41,744 bytes) 5/8/2002 10:46:35 PM Microsoft Corporation c:\winnt\system32\tcpmon.dll
pjlmon.dll 5.00.2165.1 12.77 KB (13,072 bytes) 11/30/1999 3:39:36 PM Microsoft Corporation c:\winnt\system32\pjlmon.dll
cnbjmon.dll 5.00.2134.1 43.77 KB (44,816 bytes) 11/30/1999 3:38:48 PM Microsoft Corporation c:\winnt\system32\cnbjmon.dll
localspl.dll 5.00.2195.2793 246.77 KB (252,688 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\localspl.dll
spoolss.dll 5.00.2161.1 61.77 KB (63,248 bytes) 5/9/2002 7:04:38 AM Microsoft Corporation c:\winnt\system32\spoolss.dll
spoolsv.exe 5.00.2161.1 43.77 KB (44,816 bytes) 5/9/2002 7:04:37 AM Microsoft Corporation c:\winnt\system32\spoolsv.exe
rpcss.dll 5.00.2195.2815 231.27 KB (236,816 bytes) 5/8/2002 10:46:32 PM Microsoft Corporation c:\winnt\system32\rpcss.dll
svchost.exe 5.00.2134.1 7.77 KB (7,952 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\svchost.exe
dssenh.dll 5.00.2195.2228 142.77 KB (146,192 bytes) 5/8/2002 10:47:16 PM Microsoft Corporation c:\winnt\system32\dssenh.dll
oakley.dll 5.00.2195.2785 378.77 KB (387,856 bytes) 5/8/2002 10:46:30 PM Microsoft Corporation c:\winnt\system32\oakley.dll
mfc42u.dll 6.00.8665.0 972.05 KB (995,384 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\mfc42u.dll
polagent.dll 5.00.2183.1 108.27 KB (110,864 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\polagent.dll
scecli.dll 5.00.2195.2780 105.27 KB (107,792 bytes) 5/8/2002 10:46:33 PM Microsoft Corporation c:\winnt\system32\scecli.dll
atl.dll 3.00.8449 57.56 KB (58,938 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\atl.dll
certcli.dll 5.00.2195.2778 130.77 KB (133,904 bytes) 5/8/2002 10:46:16 PM Microsoft Corporation c:\winnt\system32\certcli.dll
esent.dll 6.0.3940.13 1.08 MB (1,135,376 bytes) 5/8/2002 10:46:19 PM Microsoft Corporation c:\winnt\system32\esent.dll
ntdsatq.dll 5.00.2195.2878 31.27 KB (32,016 bytes) 5/8/2002 10:46:29 PM Microsoft Corporation c:\winnt\system32\ntdsatq.dll
ntdsa.dll 5.00.2195.2899 990.77 KB (1,014,544 bytes) 5/8/2002 10:46:29 PM Microsoft Corporation c:\winnt\system32\ntdsa.dll
kdcsvc.dll 5.00.2195.2878 137.77 KB (141,072 bytes) 5/8/2002 10:46:22 PM Microsoft Corporation c:\winnt\system32\kdcsvc.dll
sfmapi.dll 5.00.2134.1 38.77 KB (39,696 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\sfmapi.dll
rassfm.dll 5.00.2195.2671 21.27 KB (21,776 bytes) 5/8/2002 10:46:32 PM Microsoft Corporation c:\winnt\system32\rassfm.dll
rsabase.dll 5.00.2195.2228 128.27 KB (131,344 bytes) 5/3/2001 8:05:02 PM Microsoft Corporation c:\winnt\system32\rsabase.dll
schannel.dll 5.00.2195.2922 138.27 KB (141,584 bytes) 5/3/2001 8:05:02 PM Microsoft Corporation c:\winnt\system32\schannel.dll
netlogon.dll 5.00.2195.2865 357.77 KB (366,352 bytes) 5/8/2002 10:46:28 PM Microsoft Corporation c:\winnt\system32\netlogon.dll
msv1_0.dll 5.00.2195.2900 111.77 KB (114,448 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\msv1_0.dll
kerberos.dll 5.00.2195.2913 198.77 KB (203,536 bytes) 5/8/2002 10:46:22 PM Microsoft Corporation c:\winnt\system32\kerberos.dll
msprivs.dll 5.00.2154.1 41.50 KB (42,496 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\msprivs.dll
samsrv.dll 5.00.2195.2918 369.77 KB (378,640 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\samsrv.dll

lsasrv.dll 5.00.2195.2964 492.77 KB (504,592 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\lsasrv.dll
lsass.exe 5.00.2195.2964 32.77 KB (33,552 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\lsass.exe
ntlsapi.dll 5.00.2134.1 6.77 KB (6,928 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\ntlsapi.dll
xactsrv.dll 5.00.2134.1 90.27 KB (92,432 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\xactsrv.dll
wmicore.dll 5.00.2195.2842 72.27 KB (74,000 bytes) 5/8/2002 10:46:37 PM Microsoft Corporation c:\winnt\system32\wmicore.dll
rasadhlp.dll 5.00.2168.1 7.27 KB (7,440 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\rasadhlp.dll
winrnr.dll 5.00.2160.1 18.77 KB (19,216 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\winrnr.dll
rnr20.dll 5.00.2195.2871 35.77 KB (36,624 bytes) 5/8/2002 10:46:32 PM Microsoft Corporation c:\winnt\system32\rnr20.dll
wshtcpip.dll 5.00.2195.2104 17.27 KB (17,680 bytes) 5/8/2002 10:46:37 PM Microsoft Corporation c:\winnt\system32\wshtcpip.dll
msafd.dll 5.00.2195.2779 106.77 KB (109,328 bytes) 5/8/2002 10:46:23 PM Microsoft Corporation c:\winnt\system32\msafd.dll
mswsock.dll 5.00.2195.2871 62.77 KB (64,272 bytes) 5/8/2002 10:46:27 PM Microsoft Corporation c:\winnt\system32\mswsock.dll
msgsvc.dll 5.00.2195.2939 34.27 KB (35,088 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\msgsvc.dll
browser.dll 5.00.2195.2778 48.27 KB (49,424 bytes) 5/8/2002 10:46:15 PM Microsoft Corporation c:\winnt\system32\browser.dll
alrsvc.dll 5.00.2134.1 17.77 KB (18,192 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\alrsvc.dll
trkwks.dll 5.00.2166.1 88.77 KB (90,896 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\trkwks.dll
seclogon.dll 5.00.2135.1 15.77 KB (16,144 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\seclogon.dll
psbase.dll 5.00.2195.2779 111.77 KB (114,448 bytes) 5/8/2002 10:46:32 PM Microsoft Corporation c:\winnt\system32\psbase.dll
cryptsvc.dll 5.00.2181.1 61.77 KB (63,248 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\cryptsvc.dll
cryptdll.dll 5.00.2135.1 41.27 KB (42,256 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\cryptdll.dll
wkssvc.dll 5.00.2195.2780 95.27 KB (97,552 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\wkssvc.dll
srvsvc.dll 5.00.2195.2904 79.27 KB (81,168 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\srvsvc.dll
cfgmgr32.dll 5.00.2134.1 16.77 KB (17,168 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\cfgmgr32.dll
dmserver.dll 2195.2778.297.3 11.77 KB (12,048 bytes) 5/8/2002 10:46:18 PM VERITAS Software Corp. c:\winnt\system32\dmserver.dll
winsta.dll 5.00.2195.2386 36.77 KB (37,648 bytes) 5/8/2002 10:46:36 PM Microsoft Corporation c:\winnt\system32\winsta.dll
lmhsvc.dll 5.00.2195.2778 9.77 KB (10,000 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\lmhsvc.dll
dnsrslvr.dll 5.00.2195.2778 88.77 KB (90,896 bytes) 5/8/2002 10:46:18 PM Microsoft Corporation c:\winnt\system32\dnsrslvr.dll
tapi32.dll 5.00.2182.1 123.27 KB (126,224 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\tapi32.dll
rasman.dll 5.00.2195.2780 54.77 KB (56,080 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\rasman.dll
rasapi32.dll 5.00.2195.2671 189.77 KB (194,320 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\rasapi32.dll
rtutils.dll 5.00.2168.1 43.77 KB (44,816 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\rtutils.dll
adsldpc.dll 5.00.2195.2842 127.27 KB (130,320 bytes) 5/8/2002 10:46:14 PM Microsoft Corporation c:\winnt\system32\adsldpc.dll
activeds.dll 5.00.2195.2778 174.77 KB (178,960 bytes) 5/8/2002 10:46:10 PM Microsoft Corporation c:\winnt\system32\activeds.dll
mprapi.dll 5.00.2181.1 79.27 KB (81,168 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\mprapi.dll
iphlpapi.dll 5.00.2173.2 67.77 KB (69,392 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\iphlpapi.dll
icmp.dll 5.00.2134.1 7.27 KB (7,440 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\icmp.dll
dhcpcsvc.dll 5.00.2195.2778 88.77 KB (90,896 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\dhcpcsvc.dll
eventlog.dll 5.00.2178.1 43.77 KB (44,816 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\eventlog.dll
ntdsapi.dll 5.00.2195.2661 55.77 KB (57,104 bytes) 5/8/2002 10:46:29 PM Microsoft Corporation c:\winnt\system32\ntdsapi.dll
scesrv.dll 5.00.2195.2780 226.27 KB (231,696 bytes) 5/8/2002 10:46:33 PM Microsoft Corporation c:\winnt\system32\scesrv.dll
umpnpmgr.dll 5.00.2182.1 86.27 KB (88,336 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\umpnpmgr.dll
services.exe 5.00.2195.2780 86.77 KB (88,848 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\services.exe
clbcatq.dll 2000.2.3471.1 496.77 KB (508,688 bytes) 5/8/2002 10:46:16 PM Microsoft Corporation c:\winnt\system32\clbcatq.dll
oleaut32.dll 2.40.4517 612.27 KB (626,960 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\oleaut32.dll
netmsg.dll 5.00.2137.1 152.50 KB (156,160 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\netmsg.dll
comdlg32.dll 5.00.3103.1000 236.77 KB (242,448 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\comdlg32.dll
netui2.dll 5.00.2134.1 280.27 KB (286,992 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\netui2.dll
mprui.dll 5.00.2195.2104 54.77 KB (56,080 bytes) 5/8/2002 10:46:23 PM Microsoft Corporation c:\winnt\system32\mprui.dll
netui1.dll 5.00.2134.1 210.27 KB (215,312 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\netui1.dll
netui0.dll 5.00.2134.1 70.27 KB (71,952 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\netui0.dll
ntlanman.dll 5.00.2157.1 35.27 KB (36,112 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\ntlanman.dll
mpr.dll 5.00.2195.2779 53.27 KB (54,544 bytes) 5/8/2002 10:46:23 PM Microsoft Corporation c:\winnt\system32\mpr.dll
cscui.dll 5.00.2195.2959 228.27 KB (233,744 bytes) 5/8/2002 10:46:17 PM Microsoft Corporation c:\winnt\system32\cscui.dll
winspool.drv 5.00.2195.2780 109.77 KB (112,400 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\winspool.drv
winscard.dll 5.00.2134.1 77.27 KB (79,120 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\winscard.dll
wlnotify.dll 5.00.2195.2780 53.77 KB (55,056 bytes) 5/8/2002 10:46:37 PM Microsoft Corporation c:\winnt\system32\wlnotify.dll
cscdll.dll 5.00.2195.2401 98.27 KB (100,624 bytes) 5/8/2002 10:46:17 PM Microsoft Corporation c:\winnt\system32\cscdll.dll
lz32.dll 5.00.2134.1 9.77 KB (10,000 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\lz32.dll
version.dll 5.00.2134.1 15.77 KB (16,144 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\version.dll
rsaenh.dll 5.00.2195.2228 130.77 KB (133,904 bytes) 5/8/2002 10:47:16 PM Microsoft Corporation c:\winnt\system32\rsaenh.dll
mscat32.dll 5.131.2134.1 7.77 KB (7,952 bytes) 12/7/1999 12:00:00 PM Microsoft Corporation c:\winnt\system32\mscat32.dll
ole32.dll 5.00.2195.2887 969.77 KB (993,040 bytes) 5/8/2002 10:46:31 PM Microsoft Corporation c:\winnt\system32\ole32.dll
imagehlp.dll 5.00.2195.2778 125.77 KB (128,784 bytes) 5/3/2001 8:05:02 PM Microsoft Corporation c:\winnt\system32\imagehlp.dll

msasn1.dll 5.00.2134.1 51.27 KB (52,496 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\msasn1.dll
crypt32.dll 5.131.2195.2833 451.27 KB (462,096 bytes)
5/8/2002 10:46:17 PM Microsoft Corporation
c:\winnt\system32\crypt32.dll
wintrust.dll 5.131.2195.2779 162.27 KB (166,160 bytes)
5/8/2002 10:46:36 PM Microsoft Corporation
c:\winnt\system32\wintrust.dll
setupapi.dll 5.00.2195.2663 555.77 KB (569,104 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\setupapi.dll
winmm.dll 5.00.2161.1 184.77 KB (189,200 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\winmm.dll
comctl32.dll 5.81 537.77 KB (550,672 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\comctl32.dll
shlwapi.dll 5.00.3315.1000 282.77 KB (289,552 bytes)
5/8/2002 10:46:34 PM Microsoft Corporation
c:\winnt\system32\shlwapi.dll
shell32.dll 5.00.3315.2902 2.25 MB (2,359,056 bytes)
5/8/2002 10:46:34 PM Microsoft Corporation
c:\winnt\system32\shell32.dll
msgina.dll 5.00.2195.2779 324.27 KB (332,048 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\msgina.dll
wsock32.dll 5.00.2195.2871 21.27 KB (21,776 bytes)
5/8/2002 10:46:37 PM Microsoft Corporation
c:\winnt\system32\wsock32.dll
dnsapi.dll 5.00.2195.2785 130.77 KB (133,904 bytes)
5/8/2002 10:46:18 PM Microsoft Corporation
c:\winnt\system32\dnsapi.dll
wldap32.dll 5.00.2195.2797 125.27 KB (128,272 bytes)
5/8/2002 10:46:37 PM Microsoft Corporation
c:\winnt\system32\wldap32.dll
ws2help.dll 5.00.2134.1 17.77 KB (18,192 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\ws2help.dll
ws2_32.dll 5.00.2195.2780 67.77 KB (69,392 bytes)
5/8/2002 10:46:37 PM Microsoft Corporation
c:\winnt\system32\ws2_32.dll
samlib.dll 5.00.2195.2780 49.77 KB (50,960 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\samlib.dll
netrap.dll 5.00.2134.1 11.27 KB (11,536 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\netrap.dll
netapi32.dll 5.00.2195.2808 303.77 KB (311,056 bytes)
5/8/2002 10:46:28 PM Microsoft Corporation
c:\winnt\system32\netapi32.dll
profmap.dll 5.00.2181.1 29.27 KB (29,968 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\profmap.dll
secur32.dll 5.00.2195.2862 46.77 KB (47,888 bytes)
5/8/2002 10:46:33 PM Microsoft Corporation
c:\winnt\system32\secur32.dll
sfc.dll 5.00.2195.2896 92.11 KB (94,320 bytes)
5/8/2002 10:46:33 PM Microsoft Corporation
c:\winnt\system32\sfc.dll
nddeapi.dll 5.00.2137.1 15.27 KB (15,632 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\nddeapi.dll
userenv.dll 5.00.2195.2780 361.77 KB (370,448 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\userenv.dll
user32.dll 5.00.2195.2821 392.77 KB (402,192 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\user32.dll
gdi32.dll 5.00.2195.2778 228.77 KB (234,256 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\gdi32.dll
rpcrt4.dll 5.00.2195.2832 437.27 KB (447,760 bytes)
5/8/2002 10:46:32 PM Microsoft Corporation
c:\winnt\system32\rpcrt4.dll
advapi32.dll 5.00.2195.2867 351.77 KB (360,208 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\advapi32.dll
kernel32.dll 5.00.2195.2778 714.77 KB (731,920 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\kernel32.dll
msvcrt.dll 6.10.8924.0 284.05 KB (290,869 bytes)
5/3/2001 8:05:02 PM Microsoft Corporation
c:\winnt\system32\msvcrt.dll
winlogon.exe 5.00.2195.2953 173.77 KB (177,936 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\winlogon.exe
sfcfiles.dll 5.00.2195.2967 948.27 KB (971,024 bytes)
5/8/2002 10:46:33 PM Microsoft Corporation
c:\winnt\system32\sfcfiles.dll
ntdll.dll 5.00.2195.2779 478.77 KB (490,256 bytes)
5/3/2001 8:05:02 PM Microsoft Corporation
c:\winnt\system32\ntdll.dll
smss.exe 5.00.2195.2901 44.27 KB (45,328 bytes)
12/7/1999 12:00:00 PM Microsoft Corporation
c:\winnt\system32\smss.exe

[Services]

Display Name Name State Start Mode Service Type Path Error Control Start Name Tag ID
Alerter Alerter Running Auto Share Process
c:\winnt\system32\services.exe Normal
LocalSystem 0
Application Management AppMgmt Stopped Manual
Share Process c:\winnt\system32\services.exe
Normal LocalSystem 0
Computer Browser Browser Running Auto Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
Indexing Service cisvc Stopped Manual Share
Process c:\winnt\system32\cisvc.exe Normal
LocalSystem 0
ClipBook ClipSrv Stopped Manual Own Process
c:\winnt\system32\clipsrv.exe Normal
LocalSystem 0
Distributed File System Dfs Running Auto
Own Process c:\winnt\system32\dfssvc.exe
Normal LocalSystem 0
DHCP Client Dhcp Running Auto Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
Logical Disk Manager Administrative Service dmadmin Stopped
Manual Share Process
c:\winnt\system32\dmadmin.exe /com Normal
LocalSystem 0
Logical Disk Manager dmserver Running Auto Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
DNS Client Dnscache Running Auto Share Process
c:\winnt\system32\services.exe Normal
LocalSystem 0
Event Log Eventlog Running Auto Share Process
c:\winnt\system32\services.exe Normal
LocalSystem 0
COM+ Event System EventSystem Running Manual
Share Process c:\winnt\system32\svchost.exe -k
netsvcs Normal LocalSystem 0
Fax Service Fax Stopped Manual Own
Process c:\winnt\system32\faxsvc.exe Normal
LocalSystem 0
IIS Admin Service IISADMIN Running Auto Share
Process c:\winnt\system32\inetsrv\inetinfo.exe Normal
LocalSystem 0
Intersite Messaging IsmServ Stopped Disabled Own
Process c:\winnt\system32\ismserv.exe Normal
LocalSystem 0
Kerberos Key Distribution Center kdc Stopped Disabled
Share Process c:\winnt\system32\lsass.exe
Normal LocalSystem 0
Server lanmanserver Running Auto Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
Workstation lanmanworkstation Running Auto
Share Process c:\winnt\system32\services.exe
Normal LocalSystem 0
License Logging Service LicenseService Running
Auto Own Process
c:\winnt\system32\llssrv.exe Normal
LocalSystem 0
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
NetMeeting Remote Desktop Sharing mnmsrvc Stopped
Manual Own Process
c:\winnt\system32\mnmsrvc.exe Normal
LocalSystem 0
Distributed Transaction Coordinator MSDTC Running
Auto Own Process
c:\winnt\system32\msdtc.exe Normal
LocalSystem 0
Windows Installer MSIServer Stopped Manual Share
Process c:\winnt\system32\msiexec.exe /v Normal
LocalSystem 0
Network DDE NetDDE Stopped Manual Share
Process c:\winnt\system32\netdde.exe Normal
LocalSystem 0
Network DDE DSDM NetDDEdsdm Stopped Manual
Share Process c:\winnt\system32\netdde.exe
Normal LocalSystem 0
Net Logon Netlogon Stopped Manual Share Process
c:\winnt\system32\lsass.exe Normal
LocalSystem 0

Network Connections Netman Running Manual Share
Process c:\winnt\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Network News Transport Protocol (NNTP) NntpSvc Stopped
Disabled Share Process
c:\winnt\system32\inetsrv\inetinfo.exe Normal
LocalSystem 0
File Replication NtFrs Stopped Manual Own
Process c:\winnt\system32\ntfrs.exe Ignore
LocalSystem 0
NT LM Security Support Provider NtLmSsp Stopped Manual
Share Process c:\winnt\system32\lsass.exe
Normal LocalSystem 0
Removable Storage NtmsSvc Running Auto Share
Process c:\winnt\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Plug and Play PlugPlay Running Auto Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
IPSEC Policy Agent PolicyAgent Running Auto
Share Process c:\winnt\system32\lsass.exe
Normal LocalSystem 0
Protected Storage ProtectedStorage Running Auto
Share Process c:\winnt\system32\services.exe
Normal LocalSystem 0
Remote Access Auto Connection Manager RasAuto Stopped
Manual Share Process
c:\winnt\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Remote Access Connection Manager RasMan Stopped
Manual Share Process
c:\winnt\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Routing and Remote Access RemoteAccess Stopped
Disabled Share Process
c:\winnt\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Remote Registry Service RemoteRegistry Running
Auto Own Process
c:\winnt\system32\regsvc.exe Normal
LocalSystem 0
Remote Procedure Call (RPC) Locator RpcLocator
Stopped Manual Own Process
c:\winnt\system32\locator.exe Normal
LocalSystem 0
Remote Procedure Call (RPC) RpcSs Running Auto
Share Process c:\winnt\system32\svchost -k rpcss
Normal LocalSystem 0
QoS RSVP RSVP Running Manual Own Process
c:\winnt\system32\rsvp.exe -s Normal
LocalSystem 0
Security Accounts Manager SamSs Running Auto
Share Process c:\winnt\system32\lsass.exe
Normal LocalSystem 0
Smart Card Helper SCardDrv Stopped Manual Share
Process c:\winnt\system32\scardsvr.exe Ignore
LocalSystem 0
Smart Card SCardSvr Stopped Manual Share
Process c:\winnt\system32\scardsvr.exe Ignore
LocalSystem 0
Task Scheduler Schedule Running Auto Share
Process c:\winnt\system32\mstask.exe Normal
LocalSystem 0
RunAs Service seclogon Running Auto Share
Process c:\winnt\system32\services.exe Ignore
LocalSystem 0
System Event Notification SENS Running Auto
Share Process c:\winnt\system32\svchost.exe -k
netsvcs Normal LocalSystem 0
Internet Connection Sharing SharedAccess Stopped
Manual Share Process
c:\winnt\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
Simple Mail Transport Protocol (SMTP) SMTPSVC Stopped
Disabled Share Process
c:\winnt\system32\inetsrv\inetinfo.exe Normal
LocalSystem 0
Print Spooler Spooler Running Auto Own
Process c:\winnt\system32\spoolsv.exe Normal
LocalSystem 0
Performance Logs and Alerts SysmonLog Stopped
Manual Own Process
c:\winnt\system32\smlogsvc.exe Normal
LocalSystem 0
Telephony TapiSrv Running Manual Share Process
c:\winnt\system32\svchost.exe -k tapisrv Normal
LocalSystem 0
Terminal Services TermService Stopped Disabled
Own Process c:\winnt\system32\termsrv.exe
Normal LocalSystem 0
Telnet TlntSvr Stopped Manual Own Process
c:\winnt\system32\tlntsvr.exe Normal
LocalSystem 0
Distributed Link Tracking Server TrkSvr Stopped Manual
Share Process c:\winnt\system32\services.exe
Normal LocalSystem 0
Distributed Link Tracking Client TrkWks Running Auto
Share Process c:\winnt\system32\services.exe
Normal LocalSystem 0
Uninterruptible Power Supply UPS Stopped Manual
Own Process c:\winnt\system32\ups.exe
Normal LocalSystem 0
Utility Manager UtilMan Stopped Manual Own
Process c:\winnt\system32\utilman.exe Normal
LocalSystem 0
Windows Time W32Time Stopped Manual Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
World Wide Web Publishing Service W3SVC Running
Auto Share Process
c:\winnt\system32\inetsrv\inetinfo.exe Normal
LocalSystem 0
Windows Management Instrumentation WinMgmt Running
Auto Own Process
c:\winnt\system32\wbem\winmgmt.exe Ignore
LocalSystem 0
Windows Management Instrumentation Driver Extensions Wmi
Running Manual Share Process
c:\winnt\system32\services.exe Normal
LocalSystem 0

[Program Groups]

Group Name Name User Name
Accessories Default User:Accessories Default
User
Accessories\Accessibility Default
User:Accessories\Accessibility Default User
Accessories\Entertainment Default
User:Accessories\Entertainment Default User
Accessories\System Tools Default User:Accessories\System
Tools Default User
Startup Default User:Startup Default User
Accessories All Users:Accessories All Users
Accessories\Accessibility All
Users:Accessories\Accessibility All Users
Accessories\Communications All
Users:Accessories\Communications All Users
Accessories\Entertainment All
Users:Accessories\Entertainment All Users
Accessories\Microsoft Script Debugger All
Users:Accessories\Microsoft Script Debugger All Users
Accessories\System Tools All Users:Accessories\System
Tools All Users
Administrative Tools All Users:Administrative Tools All Users
Microsoft SQL Server All Users:Microsoft SQL Server All Users
Startup All Users:Startup All Users
Accessories CL01\Administrator:Accessories
CL01\Administrator
Accessories\Accessibility
CL01\Administrator:Accessories\Accessibility
CL01\Administrator
Accessories\Entertainment
CL01\Administrator:Accessories\Entertainment
CL01\Administrator
Accessories\System Tools
CL01\Administrator:Accessories\System Tools
CL01\Administrator
Administrative Tools CL01\Administrator:Administrative Tools
CL01\Administrator
Startup CL01\Administrator:Startup CL01\Administrator

[Startup Programs]

Program Command User Name Location
No startup program information

[OLE Registration]

Object Local Server
Sound (OLE2) sndrec32.exe
Media Clip mplay32.exe
Video Clip mplay32.exe /avi
MIDI Sequence mplay32.exe /mid
Sound Not Available
Media Clip Not Available
Image Document "C:\Program Files\Windows
NT\Accessories\ImageVue\KodakImg.exe"
WordPad Document "%ProgramFiles%\Windows
NT\Accessories\WORDPAD.EXE"
Windows Media Services DRM Storage object Not Available
Bitmap Image C:\WINNT\system32\mspaint.exe

[Internet Explorer 5]

[Following are sub-categories of this main category]

[Summary]

Item	Value
Version	5.00.3315.1000
Build	53315.1000
Product ID	51876-335-9534151-05664
Application Path	C:\Program Files\Internet Explorer
Language	English (United States)
Active Printer	Not Available
Cipher Strength	168-bit
Content Advisor	Disabled
IEAK Install	No

[File Versions]

File	Version	Size	Date	Path	Company
advapi32.dll	5.0.2195.2867	352 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
advpack.dll	5.0.3103.1000	87 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
browselc.dll	5.0.3315.2846	35 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
browseui.dll	5.0.3315.2846	789 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
ckcnv.exe	5.0.2189.1	9 KB	12/7/1999 1:00:00 PM	C:\WINNT\system32	Microsoft Corporation
comctl32.dll	5.81.3103.1000	538 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
crypt32.dll	5.131.2195.2833	451 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
enhsig.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
iemigrat.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
iesetup.dll	5.0.3103.1000	57 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
iexplore.exe	5.0.2920.0	59 KB	12/7/1999 1:00:00 PM	C:\Program Files\Internet Explorer	Microsoft Corporation
imagehlp.dll	5.0.2195.2778	126 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
imghelp.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
inseng.dll	5.0.3103.1000	72 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
jobexec.dll	5.0.0.1	47 KB	12/7/1999 1:00:00 PM	C:\WINNT\system32	Microsoft Corporation
jscript.dll	5.1.0.5907	476 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
jsproxy.dll	5.0.2920.0	13 KB	12/7/1999 1:00:00 PM	C:\WINNT\system32	Microsoft Corporation
msaahtml.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
mshtml.dll	5.0.3315.2870	2290 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
msjava.dll	5.0.3802.0	923 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
msoss.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
msxml.dll	8.0.5718.1	493 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
occache.dll	5.0.3103.1000	86 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
ole32.dll	5.0.2195.2887	970 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
oleaut32.dll	2.40.4517.0	612 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
olepro32.dll	5.0.4517.0	160 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
rsabase.dll	5.0.2195.2228	128 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
rsaenh.dll	5.0.2195.2228	131 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
rsapi32.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
rsasig.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
schannel.dll	5.1.2195.0	138 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
shdoc401.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available
shdocvw.dll	5.0.3315.2879	1078 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
shell32.dll	5.0.3315.2902	2304 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
shlwapi.dll	5.0.3315.1000	283 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
url.dll	5.0.2920.0	82 KB	12/7/1999 1:00:00 PM	C:\WINNT\system32	Microsoft Corporation
urlmon.dll	5.0.3315.1000	441 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
vbscript.dll	5.1.0.5907	428 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
webcheck.dll	5.0.3315.1000	252 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
win.com	5.0.2134.1	24 KB	12/7/1999 1:00:00 PM	C:\WINNT\system32	Microsoft Corporation
wininet.dll	5.0.3315.1000	457 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
winsock.dll	3.10.0.103	3 KB	12/7/1999 1:00:00 PM	C:\WINNT\system32	Microsoft Corporation
wintrust.dll	5.131.2195.2779	162 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
wsock.vxd	<File Missing>	Not Available	Not Available	Not Available	Not Available
wsock32.dll	5.0.2195.2871	21 KB	5/3/2001 8:05:02 PM	C:\WINNT\system32	Microsoft Corporation
wsock32n.dll	<File Missing>	Not Available	Not Available	Not Available	Not Available

[Connectivity]

Item	Value
Connection Preference	Never dial
EnableHttp1.1	1
ProxyHttp1.1	0

LAN Settings

AutoConfigProxy	wininet.dll
AutoProxyDetectMode	Disabled
AutoConfigURL	
Proxy	Disabled
ProxyServer	
ProxyOverride	

[Cache]

[Following are sub-categories of this main category]

[Summary]

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	5963 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]

Item	Value
Content Advisor	Disabled

[Personal Certificates]

Issued To	Issued By	Validity	Signature Algorithm
Administrator	Administrator	5/8/2002 to 4/14/2102	sha1RSA

[Other People Certificates]

Issued To	Issued By	Validity	Signature Algorithm

No other people certificate information available

[Publishers]

Name

No publisher information available

[Security]

Zone	Security Level
Local intranet	Medium-low
Trusted sites	Low
Internet	Medium
Restricted sites	High

<Microsoft SQL Server setting>

Startup Parameters

sqlservr -c -x -T3502 -g60

-c	Start SQL Server independently of the Microsoft Windows NT Service Control Manager.
-x	Disable the keeping of CPU time and cache-hit ration statistics.
-T3502	Prints a message to the log at the beginning and end of each checkpoint.
-g60	Reserve 60 MB for non-buffer pool allocations

Microsoft SQL Server Stack Size

The default stack size of Microsoft SQL Server 2000 was changed using the EDITBIN utility. The EDITBIN utility is included in the Microsoft Visual C++ package. Following command was used to change the stack size:
editbin /stack: 131072 sqlservr.exe.

Microsoft SQL Server Configuration Parameters

```
1> 2> 3> 4> 5> 6> 7> 8>  --  File:     VERSION.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Extracts current version of SQL Server


use master
1> 2> 3>
SELECT    CONVERT(char(20), SERVERPROPERTY('ProductVersion'))

 --------------------
 8.00.534

(1 row affected)
1> 2> 3>
SELECT    CONVERT(char(20), SERVERPROPERTY('ProductLevel'))

 --------------------
 SP2

(1 row affected)
1> 2> 3>
SELECT    CONVERT(char(30), getdate(),9)

 ---------------------- ---------
 Jun  6 2002  3:30:41:217AM

(1 row affected)
1> 2> 3> 4> 5>
```

```
1> 2> 3> 4> 5> 6> 7> 8> 9> 10>
--  File:     CONFIG.SQL
--            Microsoft TPC -C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Collects  SQL Server configuration parameters


PRINT     " "
SELECT    convert(char(30), getdate(),9)
PRINT     " "

 ------------------------------
 Jun  6 2002  3:30:41:530AM

(1 row affected)

1> 2> 3> DBCC execution completed. If DBC  C 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                                 minimum     maximum     config_value run_value
 ------------------------------------ ----------- ----------- ------------ -----------
 affinity mask                        -2147483648  2147483647          255         255
 allow updates                                0           1            0           0
 awe enabled                                  0           1            1           1
 c2 audit mode                                0           1            0           0
 cost threshold for parallelism               0       32767            5           5
 cursor threshold                            -1  2147483647           -1          -1
 default full-text language                   0  2147483647         1033        1033
 default language                             0        9999            0           0
 fill factor (%)                              0         100            0           0
 index create memory (KB)                   704  2147483647            0           0
 lightweight pooling                          0           1            1           1
 locks                                     5000  2147483647         8000        8000
 max degree of parallelism                    0          32            1           1
 max server memory (MB)                       4  2147483647   2147483647  2147483647
 max text repl size (B)                       0  2147483647        65536       65536
 max worker threads                          32       32767          305         305
 media retention                              0         365            0           0
 min memory per query (KB)                  512  2147483647         1024        1024
 min server memory (MB)                       0  214748   3647            0           0
 nested triggers                              0           1            1           1
 network packet size (B)                    512       65536         4096        4096
 open objects                                 0  2  147483647            0           0
 priority boost                               0           1            1           1
 query governor cost limit                    0  2147483647            0           0
 query wait (s)                              -1  2147483647           -1          -1
 recovery interval (min)                      0       32767           60          60
 remote access                                0           1            0           0
 remote login timeout (s)                     0  2147483647            0           0
 remote proc trans                            0           1            0           0
 remote query timeout (s)                     0  2147483647            0           0
 scan for startup procs                       0           1            0           0
 set working set size                         0           1            0           0
 show advanced options                        0           1            1           1
 two digit year cutoff                     1753        9999         2049        2049
 user connections                             0       32767            0           0
 user options                                 0       32767            0           0

1>
```

<Disk Array Configurations>

Disk configuration: Controller 0 ... 4

```
Begin
 BeginGroup
        PhysicalDevice0 = Channel=0, Target=0, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice1 = Channel=0, Target=1, Size=17484mb, State=   Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice2 = Channel=0, Target=2, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice3 = Channel=0, Target=3, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice4 = Channel=0, Target=4, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice5 = Channel=0, Target=5, Size=17484mb, State=Online,
                TransferSp eed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice6 = Channel=0, Target=6, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice7 = Channel=0, Target=8, Size=17484mb, State=Online,
                TransferSpeed=80MHz,  TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice8 = Channel=0, Target=9, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice9 = Channel=0, Target=10, Size=17484mb, State=Online,
                TransferSpeed=80MHz, Transfer Width=16Bit, MaxTag=32;
        PhysicalDevice10 = Channel=0, Target=11, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice11 = Channel=1, Target=0, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=1  6Bit, MaxTag=32;
        PhysicalDevice12 = Channel=1, Target=1, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice13 = Channel=1, Target=2, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, Ma  xTag=32;
        PhysicalDevice14 = Channel=1, Target=3, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice15 = Channel=1, Target=4, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice16 = Channel=1, Target=5, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice17 = Channel=1, Target=6, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice18 = Channel=1, Target=8, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice19 = Channel=1, Target=9, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice 20 = Channel=1, Target=10, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice21 = Channel=1, Target=11, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice22 = C hannel=2, Target=0, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice23 = Channel=2, Target=1, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice24 = Channel=2 , Target=2, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice25 = Channel=2, Target=3, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice26 = Channel=2, Target  =4, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice27 = Channel=2, Target=5, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice28 = Channel=2, Target=6, Size  =17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice29 = Channel=2, Target=8, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice30 = Channel=2, Target=9, Size=17484mb   , State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice31 = Channel=2, Target=10, Size=17484mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice32 = Channel=2, Target=11, Size=17484mb, Stat   e=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        IntermediateDevice0 = StripeSize=128kb, Raid=0, WriteThrough=1, Size=192324mb,
                (PhysicalDevice0, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice1, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice2, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice3, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice4, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice5, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice6, StartAddress=0mb, Size=17484m  b),
                (PhysicalDevice7, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice8, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice9, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice10, StartAddress=0mb, Size=17484mb);
        IntermediateDevice1 = StripeSize=128kb  , Raid=0, WriteThrough=1, Size=192324mb,
                (PhysicalDevice11, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice12, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice13, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice14, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice15, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice16, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice17, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice18, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice19, StartAddress=0mb,   Size=17484mb),
                (PhysicalDevice20, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice21, StartAddress=0mb, Size=17484mb);
        IntermediateDevice2 = StripeSize=128kb, Raid=0, WriteThrough=1, Size=192324mb,
                (PhysicalDevice22, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice23, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice24, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice25, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice26, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice27, StartAddress=0mb,   Size=17484mb),
                (PhysicalDevice28, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice29, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice30, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice31, StartAddress=0mb, Size=17484mb),
                (PhysicalDevice32, Star tAddress=0mb, Size=17484mb);
        LogicalDevice0 = StripeSize=128kb, Raid=12, WriteThrough=1, Size=576972mb,
BIOSGeometry=8GB,
                (IntermediateDevice0, StartAddress=0mb, Size=192324mb),
                (IntermediateDevice1, StartAddress=0mb, Size=192324mb),
                (IntermediateDe vice2, StartAddress=0mb, Size=192324mb);
 EndGroup
 BeginControllerParameter
        ControllerName = eXtremeRAID 2000;
        ControllerType = 28;
        FirmwareVersion = 5.60;
        CacheLineSize = 8KB;
        BackgroundTaskRate = 50;
        InitiatorID = 7;
        DiskStartupMode = AutoSpin;
        DevicesPerSpin = 2;
        InitialDelay = 6S;
        SequentialDelay = 0S;
        EnableDriveSizing = 0;
        EnableClustering = 0;
        EnableBGInit = 1;
        EnableReadAhead = 0;
        EnableBiosLoadDelay = 0;
        EnableForcedUnitAccess = 0;
        DisableBios = 1;
        EnableCDROMBoot = 0;
        EnableSto rageWorks = 0;
        EnableSAFTE = 1;
        EnableSES = 1;
        EnableARM = 1;
```

```
        EnableOFM = 1;
        OEMCode = 0;
        StartupOption = 0;
 EndControllerParameter
End
```

Disk configuration: Controller 5 (for DB LOG)

```
Begin
 BeginGroup
        PhysicalDevice0 = Channel=0, Target=0, Size=  17480mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice1 = Channel=2, Target=0, Size=17480mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice2 = Channel=0, Target=1, Size=17480mb, S  tate=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice3 = Channel=2, Target=1, Size=17480mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice4 = Channel=0, Target=2, Size=17480mb, State=Onlin   e,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice5 = Channel=2, Target=2, Size=17480mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice6 = Channel=0, Target=3, Size=17480mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice7 = Channel=2, Target=3, Size=17480mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice8 = Channel=0, Target=4, Size=17480mb, State=Online,
                TransferSpeed=8 0MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice9 = Channel=2, Target=4, Size=17480mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice10 = Channel=0, Target=5, Size=17480mb, State=Online,
                TransferSpeed=80MHz, Tra nsferWidth=16Bit, MaxTag=32;
        PhysicalDevice11 = Channel=2, Target=5, Size=17480mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        PhysicalDevice12 = Channel=0, Target=6, Size=17480mb, State=Online,
                TransferSpeed=80MHz, TransferWid th=16Bit, MaxTag=32;
        PhysicalDevice13 = Channel=2, Target=6, Size=17480mb, State=Online,
                TransferSpeed=80MHz, TransferWidth=16Bit, MaxTag=32;
        IntermediateDevice0 = StripeSize=128kb, Raid=1, WriteThrough=1, Size=17480mb,
                (PhysicalDevice0, StartAddress =0mb, Size=17480mb),
                (PhysicalDevice1, StartAddress=0mb, Size=17480mb);
        IntermediateDevice1 = StripeSize=128kb, Raid=1, WriteThrough=1, Size=17480mb,
                (PhysicalDevice2, StartAddress=0mb, Size=17480mb),
                (PhysicalDevice3, StartAddress=0mb, Size=17480mb  );
        IntermediateDevice2 = StripeSize=128kb, Raid=1, WriteThrough=1, Size=17480mb,
                (PhysicalDevice4, StartAddress=0mb, Size=17480mb),
                (PhysicalDevice5, StartAddress=0mb, Size=17480mb);
        IntermediateDevice3 = StripeSize=128kb, Raid=1, WriteThrough=1, Siz   e=17480mb,
                (PhysicalDevice6, StartAddress=0mb, Size=17480mb),
                (PhysicalDevice7, StartAddress=0mb, Size=17480mb);
        IntermediateDevice4 = StripeSize=128kb, Raid=1, WriteThrough=1, Size=17480mb,
                (PhysicalDevice8, StartAddress=0mb, Size=17480mb),
                (PhysicalDevice9, StartAddress=0mb, Size=17480mb);
        IntermediateDevice5 = StripeSize=128kb, Raid=1, WriteThrough=1, Size=17480mb,
                (PhysicalDevice10, StartAddress=0mb, Size=17480mb),
                (PhysicalDevice11, StartAddress=0mb, Size=17480mb);
        IntermediateDevice6 =  StripeSize=128kb, Raid=1, WriteThrough=1, Size=17480mb,
                (PhysicalDevice12, StartAddress=0mb, Size=17480mb),
                (PhysicalDevice13, StartAddress=0mb, Size=17480mb);
        LogicalDevice0 = StripeSize=128kb, Raid=12, WriteThrough=1, Size=122360mb,
BIOSGeometry=8GB ,
                (IntermediateDevice0, StartAddress=0mb, Size=34960mb),
                (IntermediateDevice1, StartAddress=0mb, Size=34960mb),
                (IntermediateDevice2, StartAddress=0mb, Size=34960mb),
                (IntermediateDevice3, StartAddress=0mb, Size=34960mb),
                (IntermediateDevice4, St artAddress=0mb, Size=34960mb),
                (IntermediateDevice5, StartAddress=0mb, Size=34960mb),
                (IntermediateDevice6, StartAddress=0mb, Size=34960mb);
 EndGroup
 BeginControllerParameter
        ControllerName = eXtremeRAID 2000;
        ControllerType = 28;
        FirmwareVersion  = 5.60;
        CacheLineSize = 8KB;
        BackgroundTaskRate = 50;
        InitiatorID = 7;
        DiskStartupMode = AutoSpin;
        DevicesPerSpin = 2;
        InitialDelay = 6S;
        SequentialDelay = 0S;
        EnableDriveSizing = 0;
        EnableClustering = 0;
        EnableBGInit = 1;
        EnableReadAhead = 0;
        EnableBiosLoadDelay = 0;
        EnableForcedUnitAccess = 0;
        DisableBios = 1;
        EnableCDROMBoot = 0;
        EnableStorageWorks = 0;
        EnableSAFTE = 1;
        EnableSES = 1;
        EnableARM = 1;
        EnableOFM = 1;
        OEMCode = 0;
        StartupOption = 0;
 EndControllerParameter
End
```

Appendix D : Space Calculation

60 Day Space

Note : Numbers are in KBytes unless otherwise specified						
Warehouses	3850	**tpmC**	48150.72	**tpmC/W**	12.51	
Table	**Rows**	**Data**	**Index**	**5% Space**	**8H Space**	**Total Space**
Warehouse	3,850	416	48	23		487
District	38,500	4,280	48	216		4,544
Item	100,000	9,528	72	221		9,821
New-order	34,650,000	547,832	1,504		308,000	857,336
History	115,500,000	6,416,680	120		1,076,123	7,492,923
Orders	115,500,000	3,540,232	1,955,384		921,637	6,417,253
Customer	115,500,000	84,000,008	5,394,208	2,056,067		91,450,283
Order-line	1,154,992,621	72,187,040	179,784		12,136,206	84,503,030
Stock	385,000,000	123,200,008	276,064	2,839,950		126,316,022
Totals		289,906,024	7,807,232	4,896,477	14,441,966	317,051,699
DB File Group	**Count**	**Size**	**Needed**	**Overhead**		**Not Needed**
MSSQL_misc_fg	5	188,928,000	100,278,248	1,002,782		87,646,969
MSSQL_cs_fg	5	306,688,000	219,943,968	2,199,440		84,544,593
Totals		495,616,000	320,222,216	3,202,222		172,191,562
Dynamic space	79,926,065	Sum of Data for Order, Order-Line and History (excluding free extents)				
Static space	225,885,890	Data + Index + 5% Space + Overhead - Dynamic space				
Free space	17,612,483	Total Seg. Size - Dynamic Space - Static Space - Not Needed				
Daily growth	15,993,756	(Dynamic space/W * 62.5)* tpmC				
Daily spread	(6,378,151)	Free space - 1.5 * Daily growth (zero if negative)				
60 day (KB)	1,185,511,263	Static space + 60 (daily growth + daily spread)				
60 day (GB)	1130.59	Excludes OS, Paging and RDBMS Logs				
Log size (MB)	99999.99	Total size of log file				
% Log used	47.91	% of log file used during entire run				
Total N-O Txn	10413924	Total count of N-O transactions during entire run				
Log per N-O txn	4.71	Number of Kbytes per New-Order transaction				
8 Hour Log (GB)	103.84	need double for mirroring				
os, file sys, swap	17.070					
	Disk size (GB)	**Priced Qty**	**Priced (GB)**	**Needed(GB)**	**Extra (GB)**	
Database, Sys	17.070	165	2816.55	1,147.66	1,685.96	
	17.070	1	17.07			
Mirrored Log	17.070	14	238.98	207.68	31.30	

Appendix E : Price Quotation

CDW The Right Technology. Right Away.™

Mylex eXtremeRAID 2000 32MB Raid Controller Card

Product Information

- 4 Channel 64-bit 33MHz Ultra3 SCSI PCI RAID controller card for PCs with 32MB cache memory 2 68 pin internal and 2 68 pin VHDCI external connectors

Usually Ships:	4-6 Days
CDW Part No.:	257552
Mfg. Part No.:	08P2500
Price:	$1,427.90

ADD TO CART

Manufacturer
Mylex

OVERVIEW

eXtremeRAID 2000 provides eXtreme performance in enterprise systems or any place where 24x7 RAID depend-ability is a must.

The eXtremeRAID 2000 is a high performance, four channel PCI to Ultra 160 SCSI RAID controller solution for midrange to enterprise servers. Featuring a 64-bit PCI interface, eXtremeRAID 2000 brings the performance and fault tolerance of RAID to high data availability applications. The eXtremeRAID 2000 incorporates up to 64MB SDRAM, and a 233 MHz RISC processor, the fastest available on a PCI-based RAID controller.

Mylex® eXtremeRAID 2000 has a multitude of features that support 24x7 reliability. These include PCI Hot Plug capability and an optional battery backup system. Support of RAID levels 0, 1, 0+1, 3, 5, 10, 30, 50 and JBOD, along with other features such as hot spare and automatic rebuild which allow the server to continue to operate when a drive fails.

As your RAID system grows, eXtremeRAID 2000 scales with it. Mylex Online RAID Expansion™(M.O.R.E.) allows you to add drives to existing arrays, and re-stripe the data across all the drives. Connect up to 60 drives for up to 4.32TB of storage capacity per controller.

SCSI Specifications:
Up to 160MB/s burst data rate per channel
Automatic SCSI bus termination
15 devices per channel
60 devices per controller
68 pin internal connectors, vhdic external connectors
Storage capacity up to 4.32TB (72GB drives)

CDW The Right Technology. Right Away.™

Product Photo: 299709

Allied Telesyn AT-9006T

Product Information

- 6-port 1000BASE-T Gigabit Ethernet

Usually Ships:	1-2 Weeks
CDW Part No.:	299709
Mfg. Part No.:	AT-9006T-10
Price:	$2,189.32 ($78.16/month)

ADD TO CART

Manufacturer
Allied Telesyn

OVERVIEW

The AT-9006 series is a feature-rich, highly cost-effective Layer 2 Gigabit Ethernet switch featuring six fixed 1000BaseT (RJ-45) or 1000BaseSX (SC) or LX (SC) fiber ports and two optional modular ports. The switch is built using a high-bandwidth 16Gbps switching fabric that is coupled with up to 12Mbytes of buffer memory. This high bandwidth switch fabric and buffer combination allows the switch to achieve high-speed performance on all Gigabit ports simultaneously.

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Gigabit Ethernet switeches are used predominantly as backbone devices in evolving and new network architectures, and are required to support all the advanced features deployed throughout today's networks. The AT-9006 series supports IEEE 802.1p Priority Queing for applications such as video conferencing and IEEE 802.1Q VLAN. Tagging for the logical sub-division of a network into functional workgroups. Other features include IGMP Snooping, which improves the performance of mutli-cast packets throughout the week.

CDW The Right Technology. Right Away.™

NEC AccuSync 50

Product Information

- 15-inch monitor with .28mm dot pitch

Usually Ships:	Same Day
CDW Part No.:	192126
Mfg. Part No.:	AS50
Price:	$144.99

ADD TO CART

Manufacturer

NEC/MITSUBISHI

OVERVIEW

NEC AccuSync 50 15-inch (13.8-inch viewable image size) monitor delivers quality and value designed specifically for small- to medium-sized businesses, institutional and home users.

SPECIFICATIONS

Compatibility
OS Compatibility: VESA DDC1/2B Plug and Play

Connectivity
Additional information: 15 pin D-sub

Dimensions
Weight: 26.7 lbs.
Dimensions: 14.2 inches (W) x 15.0 inches (H) x 15.0 inches (D)

Display
Display Type: CRT
Display size: 15 inch
Viewable image size: 13.8 inch
Dot pitch: 0.28mm trio
Horizontal dot pitch: 0.24mm

Monitor controls
User controls: Digital, On-Screen Manager, Accucolor(R) control system

Resolution
Recommended resolution: 1024 x 768
Maximum resolution: 1280 x 1024
Refresh at maximum: 66Hz
Refresh at recommended: 85Hz

Scanning frequency
Horizontal: 31 -70KHz
Vertical: 55 -120Hz

Warranty Information
Warranty, parts, length: Three year limited
Warranty, labor, length: Three year limited
Warranty, CRT: Three year limited

BACK TO TOP

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One Microsoft Way
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Fax 425 936 7329
http://www.microsoft.com/

Microsoft

June 10, 2002

NEC Corporation
Katsuya Furukawa
1-10, Nisshincho,
Fuchu City
Tokyo
Fuchu, 183-8501

Katsuya:

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

All pricing shown is in US Dollars ($).

Part Number	Description	Unit Price	Quantity	Price
810-00846	**SQL Server 2000 Enterprise Edition** *Per processor licensing* *Discount schedule: Open Program Level C*	$16,541	4	$66,164
C11-00821	**Windows 2000 Server** *Server license only - No CALs* *Discount schedule: Open Program - No Level*	$738	5	$3,690
C10-00475	**Windows 2000 Advanced Server** *Server license only - No CALs* *Discount schedule: Open Program - No Level*	$2,399	1	$2,399
048-00317	**Visual C++ Professional 6.0 Win32**	$ 549	1	$ 549
	3-year maintenance for above software	$1,950	1	$5,850

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: PCkafu0210067125
Please include this Reference ID in any correspondence regarding this price quote.