TPC Benchmark® C
Full Disclosure Report

HP Integrity rx4640-8

using Microsoft SQL Server 2005 Enterprise Itanium Edition SP1

on Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems, SP1

First Edition
March 27, 2006

First Edition - March 27, 2006

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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 was obtained in a rigorously controlled environment. Results obtained in other operating environments may vary significantly. Hewlett-Packard Company does 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 U.S.A., March 27, 2006

Abstract

Overview

This report documents the methodology and results of the TPC Benchmark® C test conducted on the HP Integrity rx4640-8 in a client/server configuration, using Microsoft SQL Server 2005 Enterprise Itanium Edition SP1 and Microsoft COM+ Transaction Monitor. The operating system used for the benchmark was Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems, SP1.

TPC Benchmark® C Metrics

The standard TPC Benchmark ® C metrics, tpmC® (transactions per minute), price per tpmC ® (three year capital cost per measured tpmC®), and the availability date are reported as required by the benchmark specification.

Standard and Executive Summary Statements

The following pages contain the executive summary of the benchmark results for the HP Integrity rx4640-8 system. The Standard System Summary is given below.

Company Name	System Name	Database Software	Operating System
Hewlett-Packard Company	HP Integrity rx4640-8	Microsoft SQL Server 2005 Enterprise Itanium Edition SP1	Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems, SP1
Total System Cost	**TPC-C Throughput**	**Price/Performance**	**Availability Date**
$788,155 USD	290,644 tpmC	$2.71 USD per tpmC	Sept 1, 2006

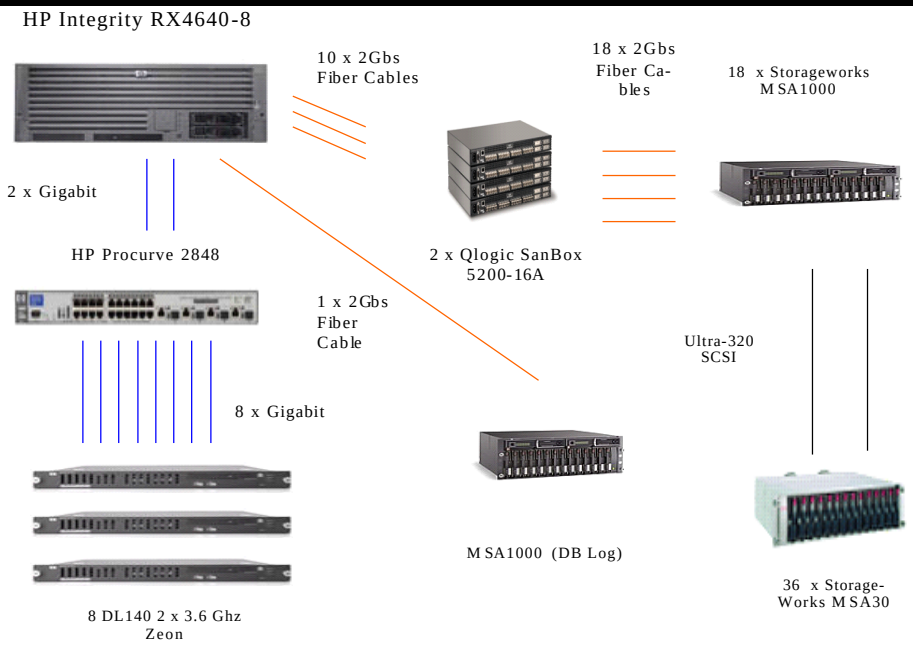
Auditor

The benchmark configuration, environment and methodology used to produce and validate the test results, and the pricing model used to calculate the cost per tpmC® , were audited by Lorna Livingtree of Performance Metrics to verify compliance with the relevant TPC specifications.

HP Integrity rx4640-8

TPC-C Revision 5.6

Total System Cost	TPC Throughput	Price/Performance	Report Date	Availability Date
$788,155 USD	290,644 tpmC	$2.71 USD per tpmC	March 27, 2006	Sept 1, 2006
Procs/Cores/Threads	**DataBase Manager**	**Operating System**	**Other Software**	**Number of Users**
Srvr - 4/8/16 Dual Core Itanium 2 Processor 9050 @ 1.6GHz Client - 8 x 2/2/4 Intel Xeon @ 3.6 GHz	Microsoft SQL Server 2005 Enterprise Itanium Edition SP1	Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems, SP1	Microsoft Visual C++ Microsoft COM+ Transaction Monitor	231,740



System Components	Server		Each Client	
	Qty	Type	Qty	Type
Procs/Cores/Thrds **Cache Memory**	4/8/16	Dual Core Itanium 2 Processor 9050 CPUs @ 1.6GHz 24 MB L3 cache	2/2/4	3.6 GHz Intel Xeon 512 KBYTE L2 Cache
Memory	8	4 x 4 Gbyte	1	1024 MB
Disk Controllers	5 1	Qlogic 2342 Emulex 1050DC	1	ATA
Disk Drives	756 14 1	HP 36GB 15 KRPM HP 146GB, 10 KRPM U320 HP 36 GB 15 KRPM drive for Boot	1	80 Gbyte disk
Total Storage		27245.88		80 Gbyte
Tape Drives	1	HP TA5300		
Terminals	1	Console Terminal	1	Console Terminal

Hewlett Packard Company	HP Integrity rx4640-8	TPCC Rev 5.6 December 2005 Report Date March 27, 2006			
Description	Price Key	Part Numbr	Unit Price	0	Extended Price	3 Yr Maint Price
HP Integrity rx4640 base system (includes Single power supply, 3-Year Limited Warranty, VGA, dual port GigE LAN card an one dual channel U320 SCSI controller card)	1	AB370B	$6,800	1	$6,800	
36GB 15K hot Plug U320 SCSI Low Profile Drive	1	AB420A	$389	1	$389	
DVD-ROM slimline drive	1	A7163B	$150	1	$150	
3 Year Svc & Support Price (Hardware and Software)	1	HA110A3-6KT	$15,253	1		$15,253
Dual Core Itanium 2 9050 Processor	1	AD268A	$14,663	4	$58,652	
16Gb Memory Quad (4x4gb dimms)	1	AB475A	$27,300	8	$218,400	
32DIMM mem carrier board, 4U chassis	1	A9739B	$4,450	1	$4,450	
2 Port 1000Base-T Gigabit Adapter	1	A9900A	Included	1	$0	
FC-HBA 2GB, 2 Channel (LP1050DC)	1	AB466A	$2,450	1	$2,450	
Qlogic QLA-2342 Dual Port Fibre-Channel Adapter	3	QLA2342-CK	$1,849	5	$9,245	
Qlogic QLA-2342 Dual Port Fibre-Channel Adapter (10% spares)	3	QLA2342-CK	$1,849	2	$3,698	
36GB, 15krpm Ultra3 Wide disk	1	286776-B22	$269	756	$203,364	
36GB, 15krpm Ultra3 Wide disk (10% Spares)	1	286776-B22	$269	76	$20,444	
Storageworks MSA30 SB	1	302969-B21	$2,829	36	$101,844	
Storageworks MSA30 SB (10% Spares)	1	302969-B21	$2,829	4	$11,316	
HP9000 Standard Rack System E41	1	A4902A	$1,910	5	$9,550	
UPS - HP R1500 XR Low Voltage US	1	204404-001	$866	1	$866	
HP Power Distribution Unit 120-240V	1	A5137AZ	$145	5	$725	
Modular Storage Array 1000	1	201723-B22	$6,995	19	$132,905	
Modular Storage Array 1000 (10% spares)	1	201723-B22	$6,995	2	$13,990	
MSA1000 controller (10% spares)	1	218231-B22	$4,290	2	$8,580	
146GB, 10krpm disk	1	286716-B22	$459	14	$6,426	
146GB, 10krpm disk (10% spares)	1	286716-B22	$459	2	$918	
5M LC to LC Cable Kit	1	221692-B22	$82	29	$2,378	
TA5300 Enclosure for DAT tape	1	C7508B	$729	1	$729	
DAT Tape	1	C7497B	$1,049	1	$1,049	
	Server Subtotal				**$819,318**	**$15,253**
Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems, SP1	1	T2030A	$2,149	1	$2,149	
Microsoft SQL Server 2005 Enterprise Itanium Edition SP1	2	810-03134	$23,432	4	$93,728	$245
	Server Software Subtotal				**$95,877**	**$245**
DL140 G2 3.6GHz Xeon 1GB 80GB SATA	1	383504-001	$2,149	8	$17,192	
2nd 3.6GHz Xeon Processor for DL140	1	378283-B21	$999	8	$7,992	
HP 3 Yr. 4h 24x7 ProLiant DL140 Hardware Support	1	HA104A3 #7HA	$419	8		$3,352
HP Mouse	1	P5304M	$28	8	$224	
HP Enhanced Keyboard (USB/PS2)	1	DC852A#ABA	$25	1	$25	
HP ProCurve 2824 port switch	1	J4903A	$2,499	1	$2,499	
HP 3y 24x7 Procurve 2824 support	1	HA104A3 #4AE	$1,041	1		$1,041
S7540 17in CRT Monitor	1	PF997AA	$139	1	$139	
Aten MasterView Plus 8 Port KVM Switch w/Cables	4	CS138A+	$199	1	$199	
	Client Subtotal				**$28,270**	**$4,393**
Microsoft Windows 2003 Server	2	P73-00295	$719	8	$5,752	
Microsoft Visual C++ Standard	2	254-00170	$109	1	$109	
Microsoft Problem Resolution	2		$245	1		$245
	Client Software Subtotal				**$5,861**	**$245**
Qlogic SANBox 5200 16 2GB Port	3	SB5200-16A	$4,371	2	$8,742	
SANbox 5200 Prime 7x24x4 Maint. Upgrade, 1-Year	3	Prime-SB5200	$1,327	6		$7,964
Finisar 2GB SFP (incl 10% spares)	3	FTRJ8519P1BNL	$84	31	$2,604	
	Connectivity Subtotal				**$11,346**	**$7,964**
	***Total Extended Price:**					**$988,772**
HP's Large Configuration Discount *	***Total Discount:**					**-$200,617**
Price Key: 1-HP, 2-Microsoft, 3-SANMarketplace.com 4 - KVMs.com	**3 year cost of ownership:**					**$788,155 USD**
	tpmC:					290,644
* A 23.43% discount was based on the overall value of the specific components from HP (Price Key 1) in this single quotation. Discounts for similarly sized configurations will be similar to those quoted here, but may vary based on the components in the configuration	**$/tpmC:**					**$2.71 USD**

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing section of the TPC benchmark specification. If you find that the state prices are not available to these terms, please inform the TPC at pricing@tpc.org. Thank you

Numerical Quantities Summary for HP Integrity rx4640-8

MQTH, Computed Maximum Qualified Throughput **290644 tpmC**

Response Times (in seconds)

	90th %-ile	Maximum	Average
New-Order	0.53s	5.02s	0.34s
Payment	0.51s	3.68s	0.32s
Order-Status	0.56s	5.05s	0.37s
Delivery (interactive portion)	0.16s	1.19s	0.11s
Delivery (deferred portion)	0.11s	4.72s	0.09s
Stock-Level	0.83s	2.11s	0.58s
Menu	0.15s	1.49s	0.11s

Response time delay added for emulated components 0.1 seconds

Transaction Mix, in percent of total transactions

New-Order	44.96%
Payment	43.01%
Delivery	4.01%
Stock-Level	4.01%
Order-Status	4.01%

Keying/Think Times

	Keying Time			Think Time		
	Min	Avg	Max	Min	Avg	Max
New-Order	18.00s	18.02s	18.07s	0.00s	12.06s	120.54s
Payment	3.00s	3.02s	3.07s	0.00s	12.06s	120.53s
Order-Status	2.00s	2.02s	2.07s	0.00s	10.06s	100.54s
Delivery (interactive)	2.00s	2.02s	2.07s	0.00s	5.07s	50.52s
Stock-Level	2.00s	2.02s	2.07s	0.00s	5.06s	50.53s

Test Duration

Ramp up time	59 minutes
Measurement interval	120 minutes
Transactions during measurement interval	77576448
Ramp down time	5 minutes

Checkpointing

Number of checkpoints in measurement interval	4
Checkpoint Interval	28.33 minutes

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Preface

Document Structure

This is the full disclosure report for a benchmark test of the HP Integrity rx4640-8 using Microsoft SQL Server 2005 Enterprise Itanium Edition SP1. It meets the requirements of the TPC Benchmark ® C Standard Specification, Revision 5.6 dated December 2005. TPC Benchmark® C was developed by the **T**ransaction Processing **P**erformance **C**ouncil (TPC). It is the intent of this group to develop a suite of benchmarks to measure the performance of computer systems executing a wide range of applications. Hewlett-Packard Company and Microsoft, Inc. are active participants in the TPC.

TPC Benchmark® C Overview

TPC Benchmark ® C is an **O**n **L**ine **T**ransaction **P**rocessing (OLTP) workload. It is a mixture of read-only and update intensive transactions that mimic 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 of data access and update

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

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

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

Hewlett-Packard Company does not warrant or represent that a user can or will achieve performance similar to the benchmark results contained in this report. No warranty of system performance or price/performance is expressed or implied by this report.

System Overview

The hardware configuration used in this TPC-C test was based on the HP Integrity rx4640-8. The full configuration was built by adding additional memory, additional disk adapters and drives. The operating system used on the server was Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems, SP1 and the database was Microsoft SQL Server 2005 Enterprise Itanium Edition SP1, build 2028.

The processor architecture of the HP Integrity rx4640-8 was designed for the Dual Core Itanium 2 Processor 9050 processor. The HP Integrity rx4640-8 used in this test was powered by 4 1.6GHz Dual Core Itanium 2 Processor 9050 processors, each with 24 MB of 3rd level cache. The 4 processors contain 8 cores, and threading was enabled. This configuration therefore presented 16 logical processors to the operating system.

This configuration used 128 GB of HP SDRAM. This was achieved by using 32 4GB DIMMs.

The operating system, all executables and libraries, the master database, and swap space were contained in one 36GB hard disk, attached to the internal SCSI controller. A partition was created on the same disc array as the log and was used for utility storage of scripts, the build environment, etc.

The database log drive storage was located on 1 HP MSA1000. The MSA1000 held 14 146MB Ultra320 SCSI hard drives. The MSA1000 disk array was connected to the Integrity RX4640-8 using 1 Emulex 1050 Fibrechannel HBA. The disks were configured as RAID 1+0, and two battery backed up disk array controller caches were enabled and mirrored on each MSA1000 (90% write, 10% read).

The TPC-C database storage consisted of 756 HP 36GB 15 KRPM disk drives. 18 HP StorageWorks MSA1000 disk arrays were used to connect the disks. Each MSA1000 holds 14 discs. Connected to each MSA1000 via 2 Ultra-320 SCSI channels were two StorageWorks MSA30's. Each MSA30 holds also holds 14 disks. The discs were configured as a RAID0 Array spanning all 42 discs in each array, for a total of 18 RAID0 data base arrays. The MSA1000 caches were disabled on the RAID0 partitions. Additionally, a RAID5 volume was configured on each set of 42 discs as fault tolerant backup for the data base. Windows partitions were created on the RAID0 volumes to contain the CS and MISC SQL filegroups. The partition sizes were the same on all 18 volumes.

Each of the 8 clients is an HP Proliant DL140 with 2 Intel Xeon Processors at 3.6 GHz, 1024 MB RAM and one 80 GB ATA hard disk, running Microsoft Windows 2003 Server with IIS 6. Threading was enabled, so 4 logical processors were presented to the operating system.

The server and web-clients were networked together using standard Gigabit LAN connections. 8 remote terminal emulators (RTEs) emulated 231,740 users executing the standard TPC-C workload. Each web-client had two embedded Gigabit LAN adapters, one of which was was used to connect to the RTEs running in Gigabit mode. HP DL140's were also used as the RTE emulators.

Microsoft SQL Server 2005 Enterprise Itanium Edition SP1 was configured to utilize "soft NUMA", a feature that allows network connections to be affined to specific groups of CPUs (The HP Integrity rx4640-8 has no hardware NUMA capability). SQL Server was configured with 8 SoftNuma nodes, each configured with 2 CPUs each. The Checkpoint process was affined to the 8th Soft NUMA node, and that node's workload was reduced to allow for the CPU needed for the checkpoint. A script doing continuous checkpoints of 1700 seconds (28 minutes, 20 seconds) was started on one of the web servers after steady state was reached with a connection port that connected to the 8th Numa Node. This allowed the main checkpoint process to run on that single processor, which directed the processing of the checkpoint tasks that SQL assigned to each of the other 8 soft Numa Nodes.

General Items

Test Sponsor

A statement identifying the sponsor of the Benchmark and any other companies who have participated.

Hewlett-Packard Company was the test sponsor of this TPC Benchmark C.

Application Code and Definition Statements

The application program must be disclosed. This includes, but is not limited to, the code implementing the five transactions and the terminal input/output functions.

The Section 3.0 entitled Clause 3 Related Items contains a brief discussion of the database design and loading. The database definition statements, distribution across disk drives, loading scripts, and tables are provided in Appendix B.

The program that implements the TPC Benchmark C translation and collects appropriate transaction statistics is referred to as the Remote Terminal Emulator (RTE) or Driver program. We have used the Microsoft BenchCraft RTE program that emulated a set of users entering TPC-C transactions through web browsers, and communicating with web-client machines running the Microsoft Internet Information Server (IIS) web server. The web-client machines used the COM+ transaction monitor (TM) to communicate with the database server.

On each web-client machine, IIS loads a custom Microsoft Internet Information Server Application Programming Interface dynamic link library (ISAPI DLL) application program that communicates with the emulated web browsers through the HTTP protocol and the database server through the COM+ TM and the Microsoft ODBC interface. The application supplies fill-in screens to the user for each transaction, then parses the data in each request, and makes a call on SQL Server through the COM+ layer, which manages a set of ODBC connections to the database server. The resulting data is passed back to the application where it is formatted into HTML and sent back to the user's browser. The *delivery* transaction is handled directly from the application to the database without the use of COM+.

Parameter Settings

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

- *Database options*
- *Recover/commit options*
- *Consistency/locking options*
- *System parameter, application parameters, and configuration parameters.*

Appendix C contains all the database and operating system parameters used in this benchmark in addition to all the hardware configuration details.

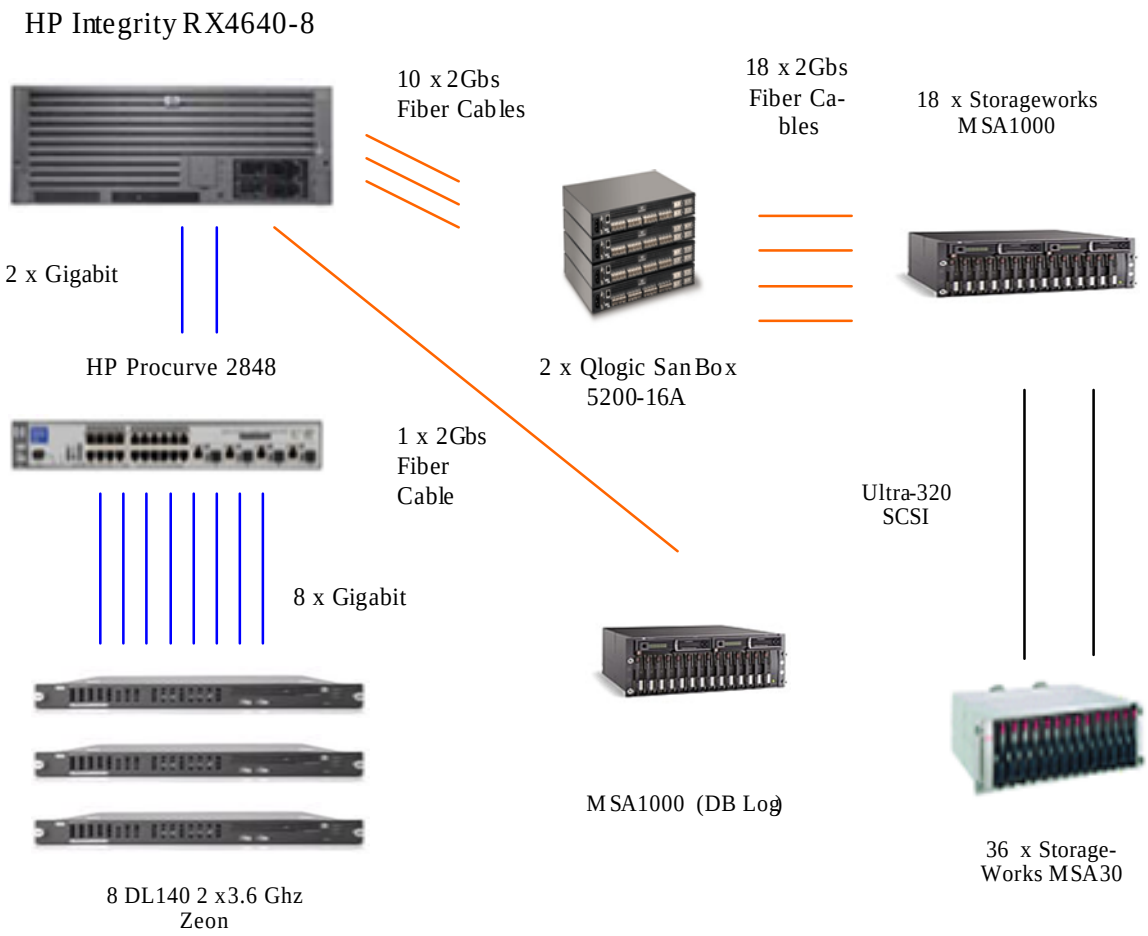
Appendix D contains the 60 day space calculations.

Configuration Diagrams

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

The measured and priced client/server configuration is shown in Figures 1.

Figure 1. Measured and Priced Configuration



Chapter 1 Logical Database Design

1.1 Table Definitions

A 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.

1.2 Physical Organization of the Database

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

The measured database configuration used a total of 756 disks, 14 HP 146GB, 10 KRPM U320 drives for log, and one 36GB drive for the operating system.

Part of the space on each of the 18 database disk arrays was configured as 1 RAID0 volume over 42 36GB drives. Each volume held 2 partitions, one for the CS filegroup where the Customer and Stock tables were stored and one partition for MISC filegroup where all other tables were stored. The remainder of the disc space on each of the 18 Arrays was configured as a RAID5 volume over all 42 36GB drives. Each volume had 2 partitions, containaining backups of the data base.

1.3 Insert and Delete Operations

It must be ascertained that insert and delete operations to any of the tables can occur concurrently with the TPC-C transaction mix. Furthermore, any restrictions 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 and verified during the entire benchmark.

1.4 Partitioning

While there are a few restrictions placed upon horizontal or vertical partitioning of tables and rows in the TPC-C Benchmark, any such partitioning must be disclosed.

Partitioning was not used on any table.

1.5 Replication, Duplication or Additions

Replication of tables, if used, must be disclosed. Additional and/or duplicated attributes in any table must be disclosed along with a statement on the impact on performance.

No replications, duplications or additional attributes were used.

Chapter 2 Transaction and Terminal Profiles

2.1 Random Number Generation

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

The random number generation was done internal to the Microsoft BenchCraft RTE program, which was audited independently.

2.2 Input/Output Screen Layout

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

The screen layouts are based on those in Clauses 2.4.3, 2.5.3, 2.6.3, 2.7.3, and 2.8.3 of the TPC-C® Standard Specification.

2.3 Priced 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).

The terminal features were verified by allowing the auditor to manually execute each of the five transaction types, using the Microsoft Internet Explorer.

2.4 Transaction Statistics

The transaction profiles must be disclosed as per Clauses 8.1.3.5 through 8.1.3.10.

Table 1 shows the transaction statistics.

Table 1. Transaction Statistics

Type	Item	Value
New Order	Home warehouse items	99.00%
	Remote warehouse items	1.00%
	Rolled back transactions	1.00%
	Average items per order	10.00
Payment	Home warehouse	85.00%
	Remote warehouse	15.00%
	Non primary key access	60.01%
Order Status	Non primary key access	60.04%
Delivery	Skipped transactions	0
Transaction Mix	New Order	44.96%
	Payment	43.01%
	Delivery	4.01%
	Stock Level	4.01%
	Order Status	4.01%

2.5 Presentation Manager or Intelligent Terminal

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

Comment 1*: The intent of this clause is to describe any special manipulations performed by a local terminal or workstation to off-load work from the SUT. This includes, but is not limited to: screen presentations, message bundling, and local storage of TPC-C rows.*
Comment 2*: This disclosure also requires that all data manipulation functions performed by the local terminal to provide navigational aids for transaction(s) must also be described. Within this disclosure, the purpose of such additional function(s) must be explained.*

Application code running on the web-client implemented the TPC-C® user interface. Screen manipulation commands in the form of HTML were downloaded to the web browser, which handled input and output presentation graphics. A listing of this code is included in Appendix A. Microsoft Internet Information Service assisted in the processing and presentation of this data.

2.6 Queuing Mechanism

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

The application creates a semaphore-based thread pool consisting of a user-specified number of threads, which open ODBC connections on the database. When a *delivery* transaction is posted, one of these threads makes the database call while the transaction's original thread returns control to the user. Upon completion, the delivery thread writes an entry in the delivery log and returns to the thread pool.

The source code is listed in Appendix A.

Chapter 3 Transaction and System Properties

3.1 Transaction System Properties (ACID Tests)

Results of the ACID test must describe how the 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). The following subsections will define each of these properties and describe the series of tests that were performed by HP to demonstrate that the properties were met.

All of the specified ACID tests were successfully performed on the HP Integrity rx4640-8. A fully scaled database was used for all the durability tests.

3.2 Atomicity Tests

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

3.2.1 COMMIT Transaction

The following steps were followed to demonstrate the COMMIT property of Atomicity:

A row was randomly selected from the Warehouse, District and Customer tables, and the present balances noted. The standard payment transaction was started against the above identifiers using a known amount. The transaction was committed and the rows were verified to contain the correct updated balances.

3.2.2 ROLLBACK Transaction

The following steps were followed to demonstrate the COMMIT property of Atomicity:

A row was randomly selected from the Warehouse, District and Customer tables, and the present balances noted. The standard payment transaction was started against the above identifiers using a known amount. The transaction was rolled back and the rows were verified to contain the original balances.

3.3 Consistency Tests

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

Consistency conditions 1 through 4 were tested using a shell script to issue queries to the database. The results of the queries verified that the database was consistent for all four tests. A performance run was executed at rated speed. The shell script was executed again. The result of the same queries verified that the database remained consistent after the run.

3.4 Isolation Tests

Operations of concurrent transactions must yield results which are indistinguishable from the results which would be obtained by forcing each transaction to be serially executed to completion in some order.

This property is commonly called serializability. Sufficient conditions must be enabled at either the system or application level to ensure serializability of transactions under any mix of arbitrary transactions.

We ran a total of nine isolation tests. Seven of these tests are detailed in the TPC-C specification (clause 3.4.2.1to 3.4.2.7). The additional two are to fully comply with the isolation requirements that are not directly specified in the TPC-C specification. These two tests are known as Phantom Protection One and Two. They demonstrate that the applications are protected from phantom inserts.

3.5 Durability Tests

The tested system must guarantee the ability to preserve the effects of committed transactions and insure database consistency after recovery from any one of the failures listed in clause 3.5.3.1, 3.5.3.2, and 3.5.3.3.

Three types of failures were tested to ensure the durability of the database: Loss of Data, Loss of Log, and Loss of System/Memory. All test were performed on the full scale database..

3.5.1 Loss of Data

The standard driving mechanism was used to generate the transaction load of slightly more than 23,174 users for the test (10% of full load). To demonstrate recovery from a permanent failure of durable media containing TPC-C tables, the following steps were executed:

1. The database was backed up using SQLServer backup facilities.
2. A sum of D_NEXT_O_ID was taken.
3. Slightly more than 23,174 (10%) users were logged in to the database and ran transactions.
4. After 5 minutes, one data disk drive was removed. Errors were noted on both the SQL log, OS log, and the RTE log.
5. The RTE monitor was used to verify that no users were lost.
6. The RTE was shutdown and a success file was created.
7. The database log was backed up to disc.
8. SQL was shut down, the disc re-inserted and the RAID0 volume recovered.
9. The database was restored from the original backup that was restored before the run, specifying recovery NOT be done after the restore.
10. The log was restored with recovery, effectively rolling forward all successful transactions from the run.
11. Transaction were exported from the success file. 6 New Orders were chosen at random and verified to exist in the database.

3.5.2 Loss of System / Memory and loss of Log

This was demonstrated on the full database with 25000 warehouses in a single test. The standard driving mechanism was used to generate the transaction load of 231,740 users for this test. To demonstrate recovery the following steps were followed:

1. The full database was used.
2. A sum of D_NEXT_O_ID was taken.
3. 231,740 users were logged in to the database and ran transactions.
4. Rampup was performed until the TPMC rate was 90% of the reported rate.
5. After 5 minutes, one of the (mirrored) log disk was removed from the system, processing transactions continued.
6. After another 5 minutes, the system was reset using the built-in Maintenance Processor. This reset the hardware, reran memory initialization, and reloaded the Widows OSS..
7. The RTE continued running and completed transactions enroute from the clients were recorded. Error messages began appearing on the RTE screen.
8. The RTE was stopped.
9. After Windows was finished booting, Microsoft SQL Server was restarted and performed an automatic recovery.
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.
12. Samples were taken of the RTE log and verified against the database.

Chapter 4 Scaling and Database Population

4.1 Database Layout

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

The measured (tested) and priced systems used 5 Qlogic 2342 Disk Array Controllers. The MSA1000 disk array that held the database log was connected to an Emulex 1050 FC HBA.

The measured database configuration used a total of 771 disks, which included 756 HP 36GB 15 KRPM drives for data, 14 HP 146GB, 10 KRPM U320 drives for log, and 1 36GB drive for the operating system. Part of the space on each of the 18 database disk arrays was configured as 1 RAID0 volume over 42 36GBdrives. Each volume held 2 partitions, one for the CS filegroup where the Customer and Stock tables were stored and one partition for MISC filegroup where all other tables were stored. The remainder of the disc space on each of the 18 Arrays was configured as a RAID5 volume over all 28 36 GB drives. Each volume had 1 partition, containaining backups of the data base.

Table 2a shows the complete data distribution.

The database log drive storage was located on 1 HP MSA1000. The MSA1000 held 14 146MB Ultra320 SCSI hard drives. The MSA1000 disk arrays were connected to the HP Integrity rx4640-8 using 1 Emulex 1050 Fibrechannel HBA. The disks were configured as RAID 1+0, and two battery backed up disk array controller caches were enabled and mirrored on each MSA1000 (90% write, 10% read). Not all the space visible to the OS on the log array was configured for the log in SQL, but could have been if needed. Table 2b shows the log distribution.

Table 2a: Data Distribution

Modular Storage Array 1000 #1			WINDOWS.NET DISK ADMIN	
			DISK 1	
SCSI ID	Channels		Partitions (RAID 0): 131GB Disk	
	0	1	0	1
0	36GB	36GB	G:\MNT\CS1 Raw 84GB	G:\MNT|MISC1 Raw 47 GB
1	36GB	36GB		
2	36GB	36GB		
3	36GB	36GB		
4	36GB	36GB		
5	36GB	36GB		
6	36GB	36GB		
MSA1000 U320 Channels			WINDOWS.NET DISK ADMIN	
2 StorageWorks MSA30			DISK 2	
SCSI ID	Channels		Partitions (RAID 5): 647GB	
	2	3	0	1
0	36GB	36GB	G:\MNT\BACKUP\1\ NTFS Volume Backup1 130 GB	G:\MNT\BACKUP2\1\ NTFS Volume Backup1 130 GB
1	36GB	36GB		
2	36GB	36GB		
3	36GB	36GB		
4	36GB	36GB		
5	36GB	36GB		
6	36GB	36GB		
8	36GB	36GB		
9	36GB	36GB		
10	36GB	36GB		
11	36GB	36GB		
12	36GB	36GB		
13	36GB	36GB		
14	36GB	36GB		

Modular Storage Array 1000 #2			WINDOWS.NET DISK ADMIN	
			DISK 3	
SCSI ID	Channels		Partitions (RAID 0): 131GB Disk	
	0	1	0	1
0	36GB	36GB	G:\MNT\CS2 Raw 84GB	G:\MNT|MISC2 Raw 47 GB
1	36GB	36GB		
2	36GB	36GB		
3	36GB	36GB		
4	36GB	36GB		
5	36GB	36GB		
6	36GB	36GB		
MSA1000 U320 Channels			WINDOWS.NET DISK ADMIN	
2 StorageWorks MSA30			DISK 4	
SCSI ID	Channels		Partitions (RAID 5): 647GB	
	2	3	0	1
0	36GB	36GB	G:\MNT\BACKUP\2 NTFS Volume Backup2 130 GB	G:\MNT\BACKUP2\2 NTFS Volume Backup2 130 GB
1	36GB	36GB		
2	36GB	36GB		
3	36GB	36GB		
4	36GB	36GB		
5	36GB	36GB		
6	36GB	36GB		
8	36GB	36GB		
9	36GB	36GB		
10	36GB	36GB		
11	36GB	36GB		
12	36GB	36GB		
13	36GB	36GB		
14	36GB	36GB		

…..

….

Modular Storage Array 1000 #18			WINDOWS.NET DISK ADMIN	
			DISK 35	
SCSI ID	Channels		Partitions (RAID 0): 131GB Disk	
	0	1	0	1
0	36GB	36GB	G:\MNT\CS18 Raw 84GB	G:\MNT\MISC18 Raw 47 GB
1	36GB	36GB		
2	36GB	36GB		
3	36GB	36GB		
4	36GB	36GB		
5	36GB	36GB		
6	36GB	36GB		
MSA1000 U320 Channels			WINDOWS.NET DISK ADMIN	
2 StorageWorks MSA30's			DISK 36	
SCSI ID	Channels		Partitions (RAID 5): 647GB	
	2	3	0	1
0	36GB	36GB	G:\MNT\BACKUP\18 NTFS Volume Backup24 130 GB	G:\MNT\BACKUP2\18 NTFS Volume Backup24 130 GB
1	36GB	36GB		
2	36GB	36GB		
3	36GB	36GB		
4	36GB	36GB		
5	36GB	36GB		
6	36GB	36GB		
8	36GB	36GB		
9	36GB	36GB		
10	36GB	36GB		
11	36GB	36GB		
12	36GB	36GB		
13	36GB	36GB		
14	36GB	36GB		

Table 2b: Log Distribution

Emulex 1050 Fiber Adapter #1			WINDOWS.NET DISK ADMIN		
1 MSA1000			DISK 1 (Dynamic)		
SCSI ID	Channels		Partitions (RAID 1+0 957 GB)		
	0	1	0	1	2
0	36GB	36GB	(no drv ltr) Raw 10 MB (for proper alignment)	L: Raw 908.21 GB (NT Software Striped)	G: NTFS 48.9 GB (Utility, Software striped)
1	36GB	36GB			
2	36GB	36GB			
3	36GB	36GB			
4	36GB	36GB			
5	36GB	36GB			
6	36GB	36GB			

4.2 Initial Cardinality of Tables

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

Table 3 shows the cardinality of the various tables.

Table 3: Table Cardinality

Table	Occurrences
Warehouse	25,000
District	250,000
Customer	750,000,000
History	750,000,000
Orders	750,000,000
New Orders	225,000,000
Order Line	840,041,944
Stock	2,500,000,000
Item	100,000

No rows were deleted for the benchmark runs.

4.3 60 Day 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 must be disclosed.

4.3.1 Transaction Log Space Requirements

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 logfile was queried using **dbcc sqlperf(logspace)**.
2. Transactions were run against the database with a full load of users.
3. The free space was again queried using **dbcc sqlperf(logspace)**.
4. The space used was calculated as the difference between the first and second query.
5. The number of NEW-ORDERS was verified from an RTE report covering the entire run.
6. The space used was divided by the number of NEW-ORDERS giving a space used per NEW-ORDER transaction.
7. The space used per transaction was multiplied by the measured tpmC rate times 480 minutes.

The result of the above steps yielded a requirement of 646 GB to sustain the log for 8 hours. Space available for the transaction log was 820 GB indicating that enough storage was configured to hold 8 hours of growth.

The same methodology was used to calculate the growth requirements for the other dynamic tables Order, Order-Line and History. The details of the 60ay growth calculation are shown in Appendix D.

4.4 Type of Database Used

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 2005 Enterprise Itanium Edition SP1 is a relational DBMS.

The interface was SQL Server stored procedures accessed with library calls embedded in C code.

4.5 Database Mapping

The mapping of database partitions and replications must be described.

The database was divided into 2 file groups misc_fg and cs_fg. misc_fg consists of 60 partitions at 110430 MB each and misc_fg consist of 60 partitions at 61200 MB each as shown in the createdb.sql. The log was configured with 20,000 MB at database creation, and was expanded to 1,500,000 MB after data base creation and load.

Chapter 5 Performance Metrics and Response Time

5.1 Throughput

Measured tpmC® must be reported.

Measured TpmC®: 290,644
Price per TpmC®: $2.71 USD

5.2 Response Times

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

Table 3 shows the response times for all transaction types.

Table 4: Transaction Response Times

Response Times	Average	90th %-ile	Maximum
New-Order	0.34s	0.53s	5.02s
Payment	0.32s	0.51s	3.68s
Order-Status	0.37s	0.56s	5.05s
Delivery (interactive portion)	0.11s	0.16s	1.19s
Delivery (deferred portion)	0.09s	0.11s	4.72s
Stock-Level	0.58s	0.83s	2.11s
Menu	0.11s	0.15s	1.49s

5.3 Keying and Think Times

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

Tables 4 and 5 show the key times and think times for all transaction types.

Table 5: Transaction Key Times

Keying Times	Minimum	Average	Maximum
New Order	18.00	18.02s	18.07s
Payment	3.00	3.02s	3.07s
Order Status	2.00	2.02s	2.07s
Interactive Delivery	2.00	2.02s	2.07s
Stock Level	2.00	2.02s	2.07s

Table 6: Transaction Think Times

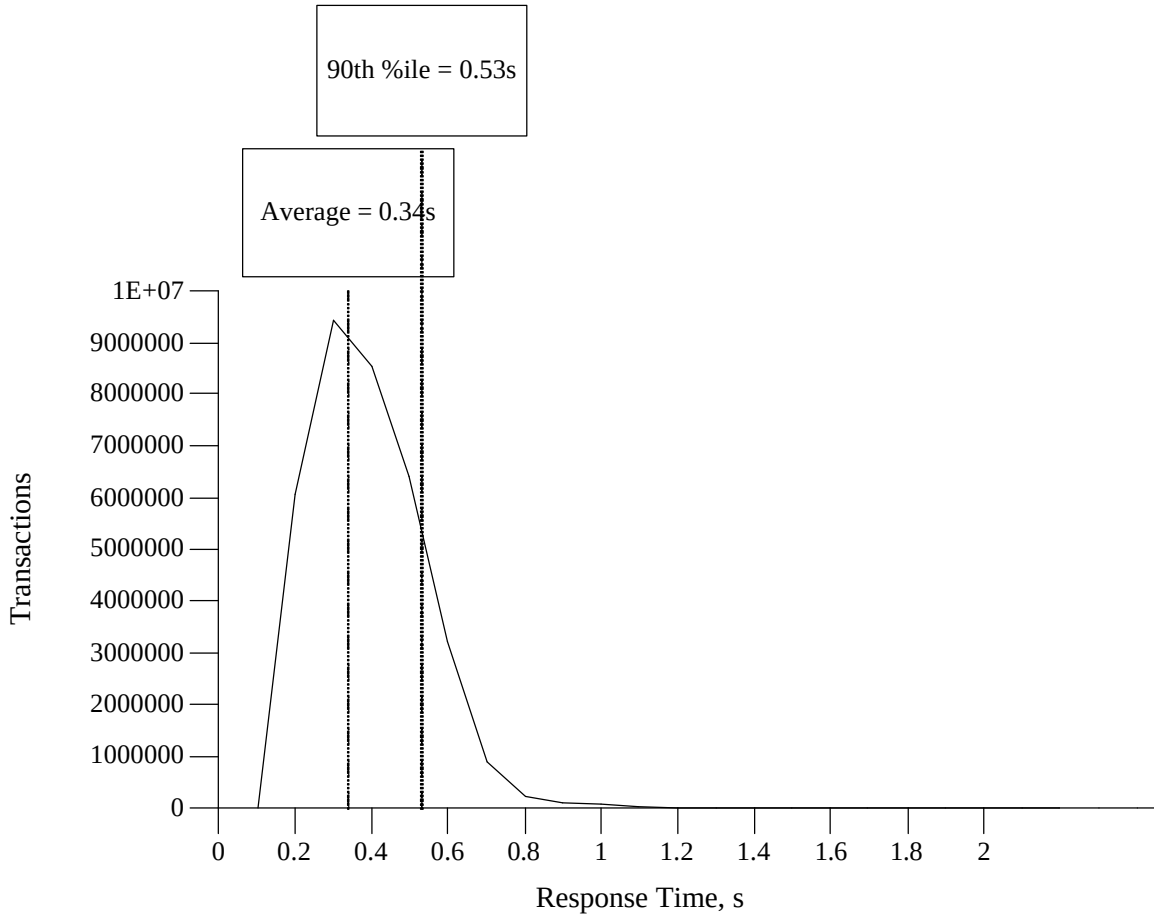
Think Times	Minimum	Average	Maximum
New Order	0	12.06s	120.54s
Payment	0	12.06s	120.53s
Order Status	0	10.06s	100.54s
Interactive Delivery	0	5.07s	50.52s
Stock Level	0	5.06s	50.53s

5.4 Response Time Frequency

Response Time frequency distribution curves (see Clause 5.6.1) must be reported for each transaction type. The performance curve for response times versus throughput (see Clause 5.6.2) must be reported for the New-Order transaction. Think Time frequency distribution curves (see Clause 5.6.3) must be reported for each transaction type. Keying Time frequency distribution curves (see Clause5.6.4) must be reported for each transaction type. A graph of throughput versus elapsed time (see Clause 5.6.5) must be reported for the New-Order transaction.

5.4.1 New Order Response Time

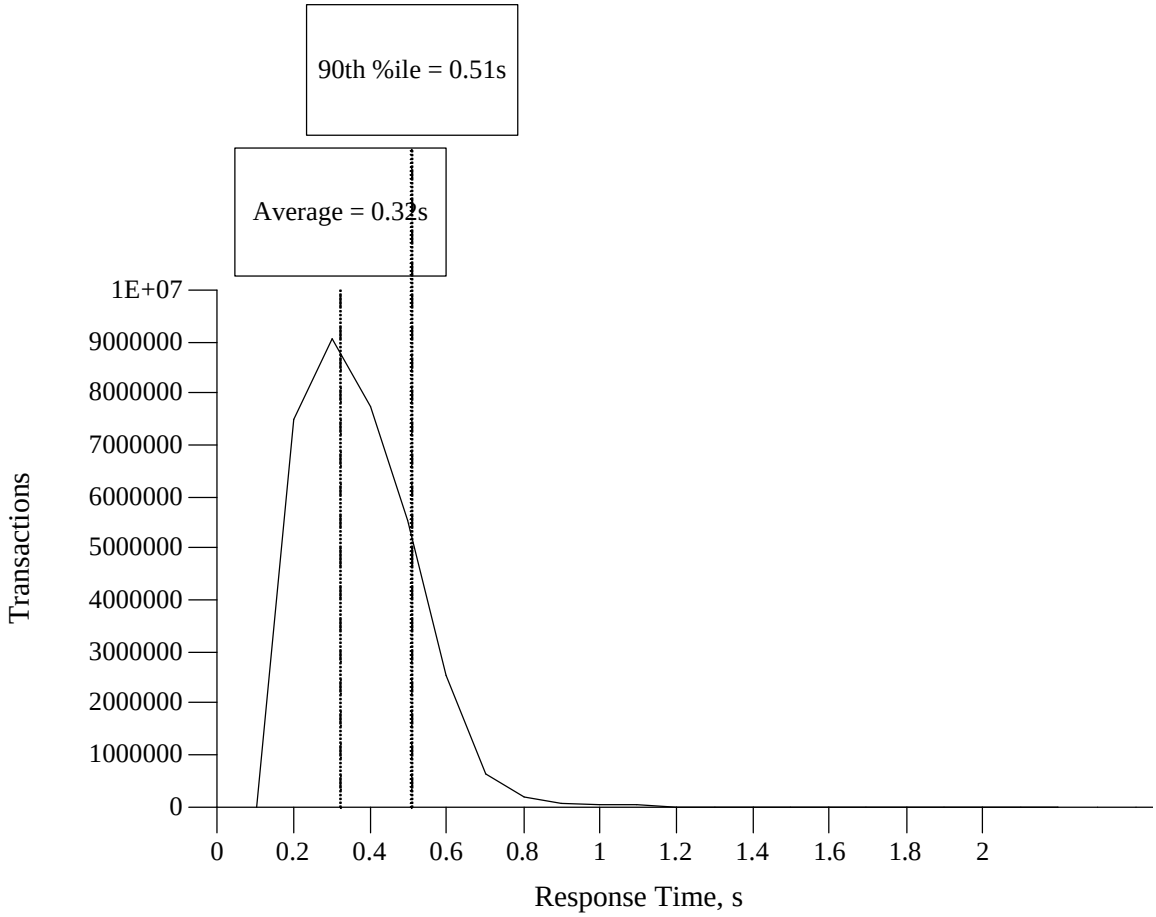
Figure 3: New Order Response Time Distribution



Response time frequency distribution for New Order transaction

5.4.2 Payment Response Time Distribution

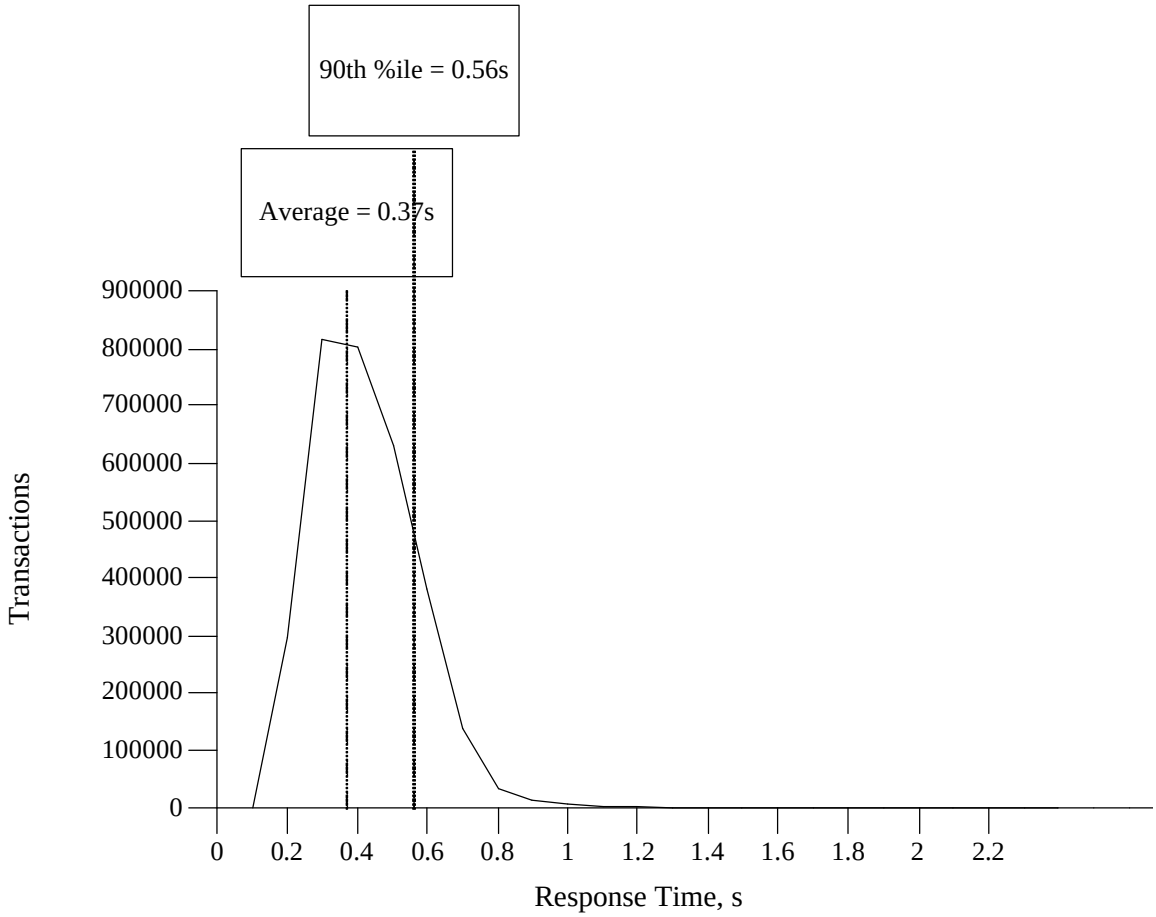
Figure 4: Payment Response Time Distribution



Response time frequency distribution for Payment transaction

5.4.3 Order Status Response Time

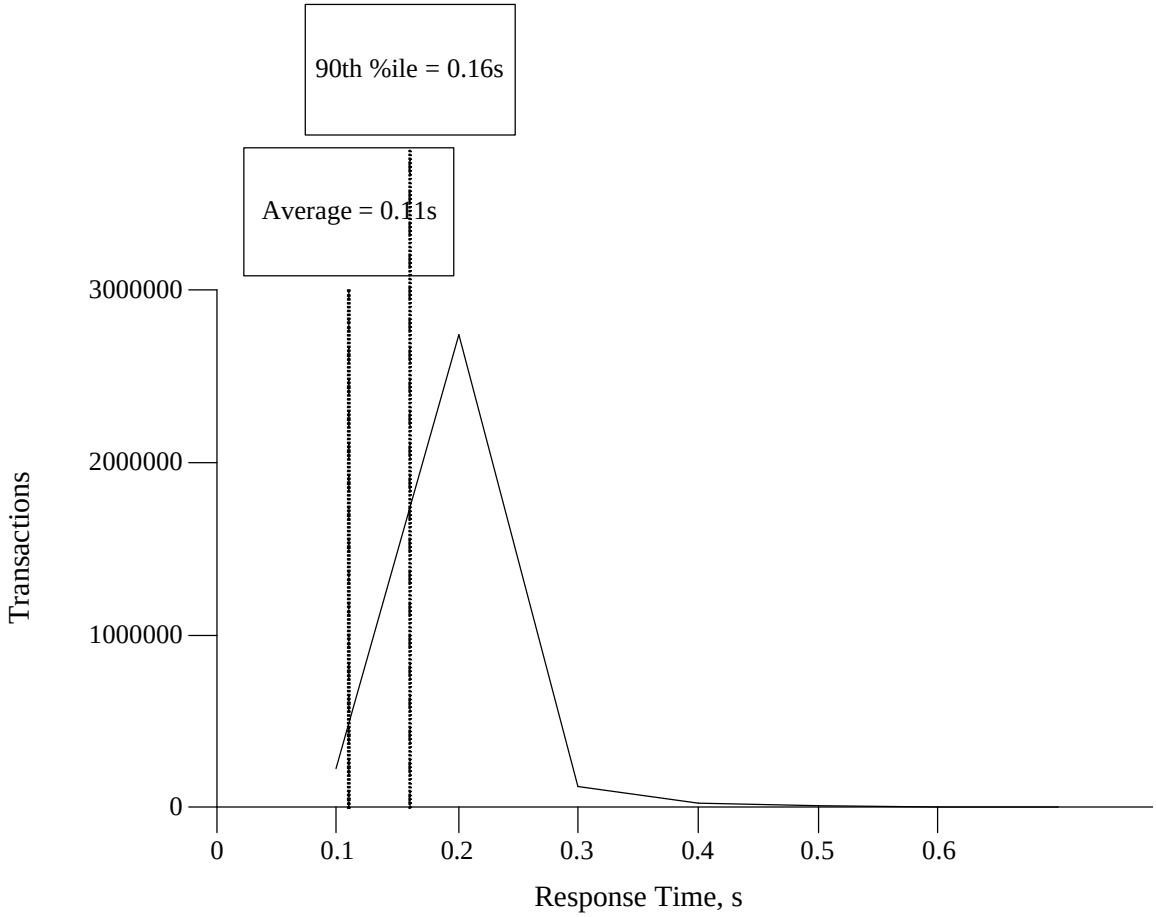
Figure 5: Order Status Response Time Distribution



Response time frequency distribution for Order Status transaction

5.4.4 Delivery Response Time Distribution

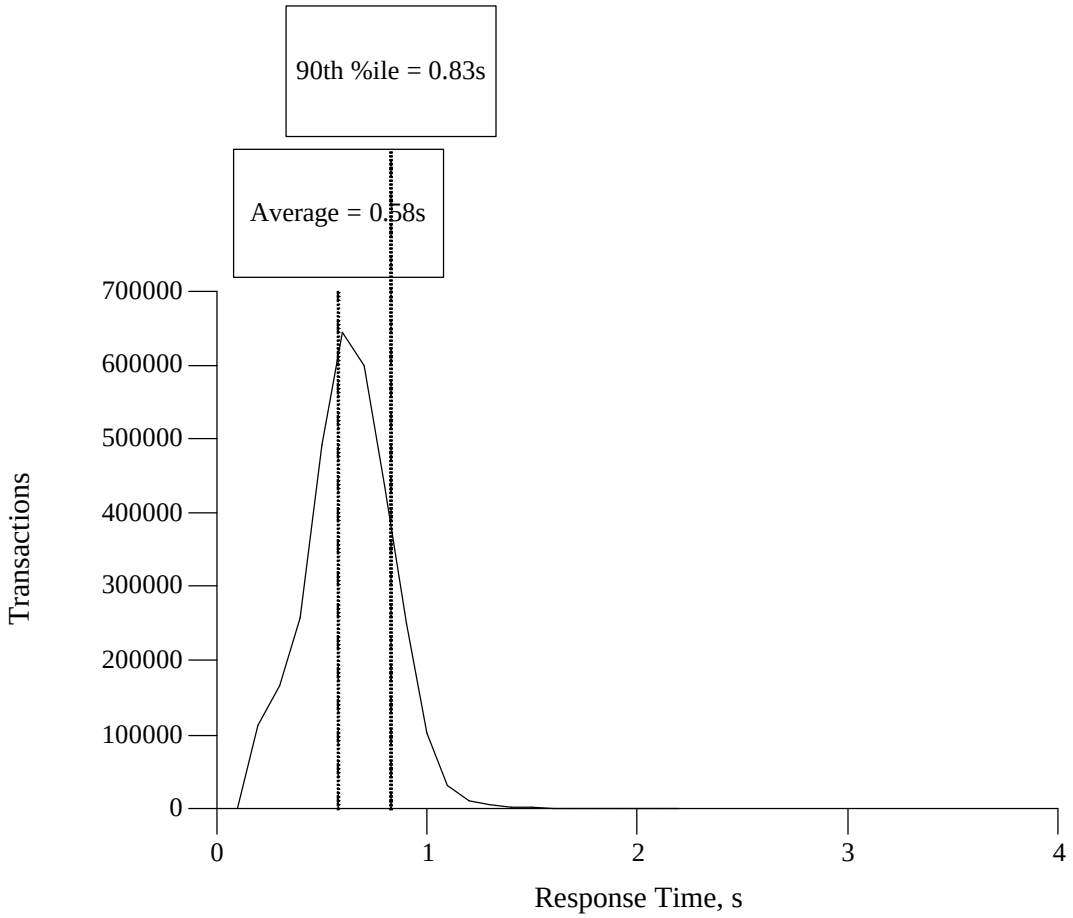
Figure 6: Delivery Response Time Distribution



Response time frequency distribution for Delivery transaction

5.4.5 Stock Level Response Time

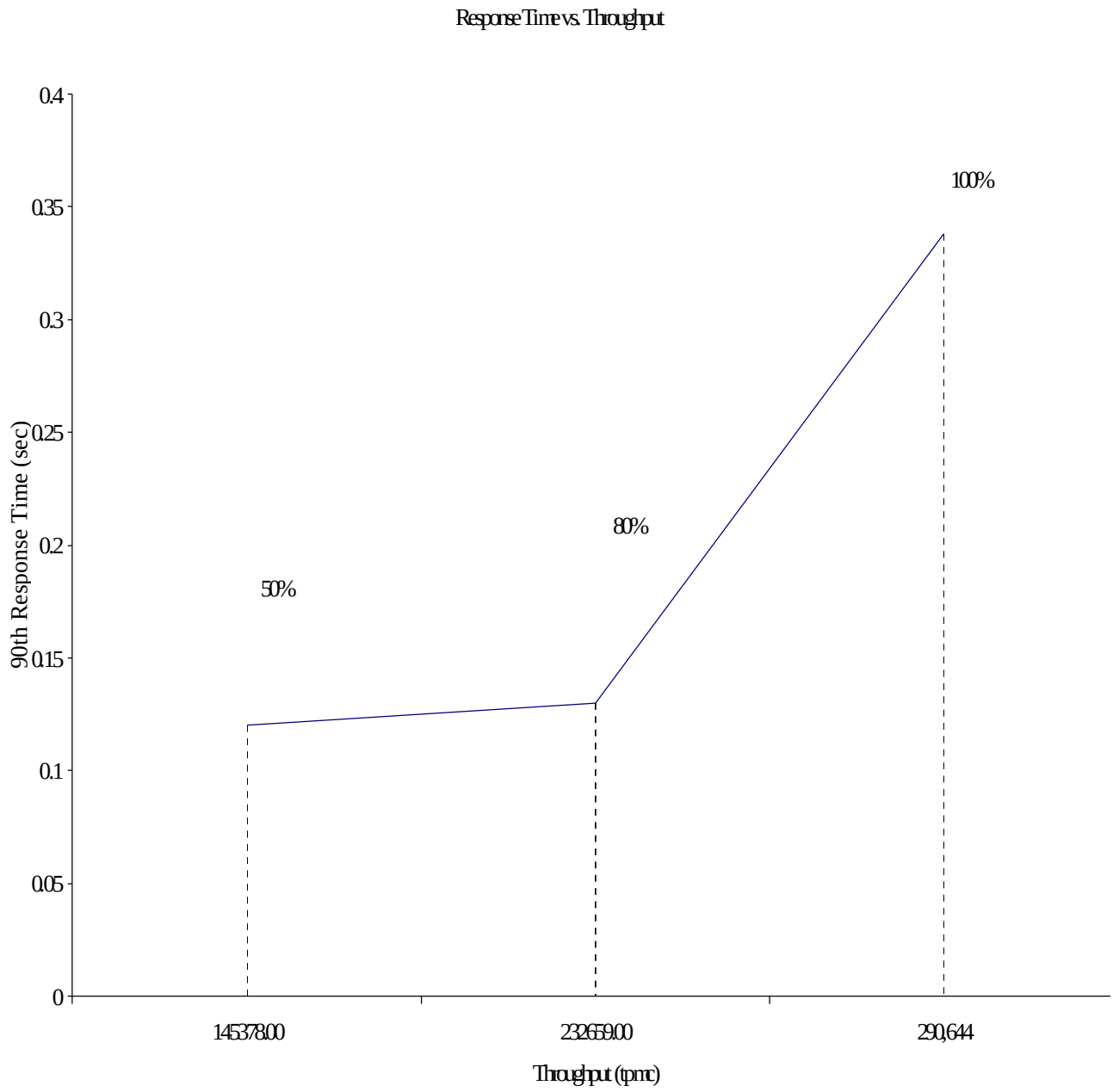
Figure 7: Stock Level Response Time Distribution



Response time frequency distribution for Stock Level transaction

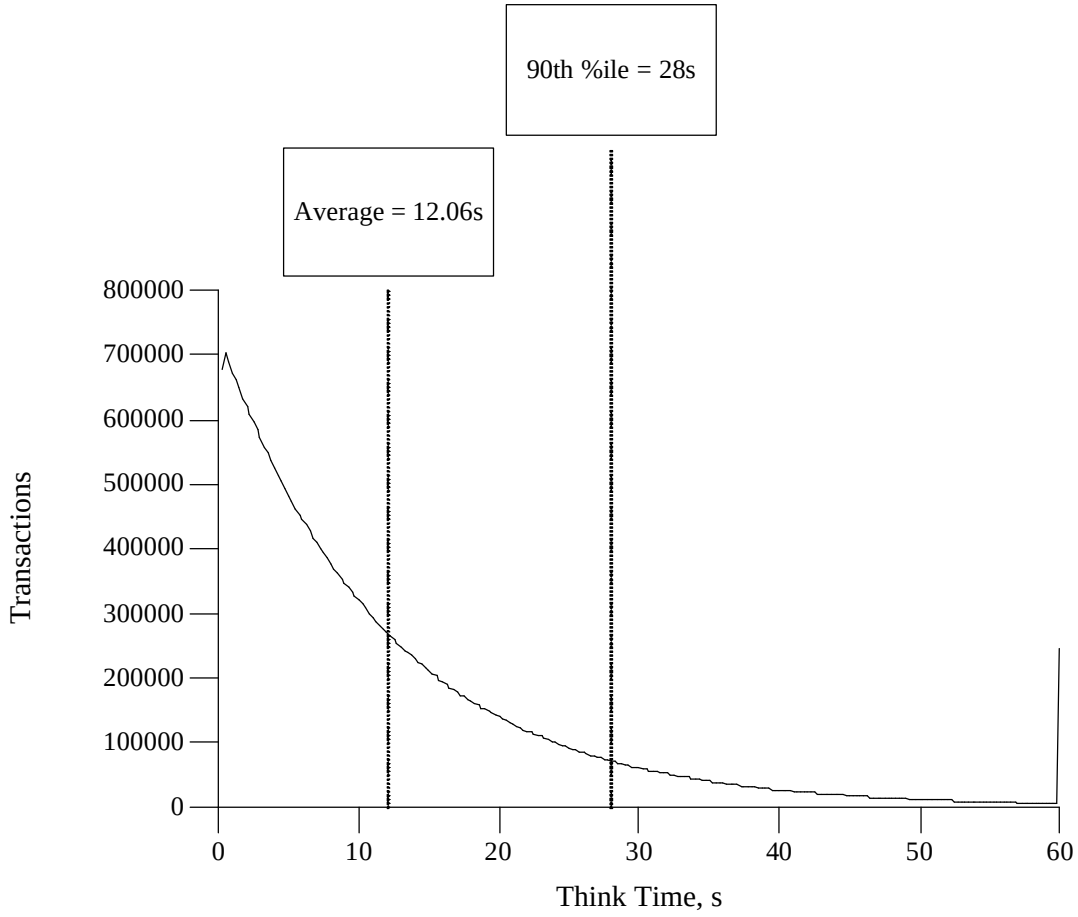
5.4.6 Response Time Versus Throughput

Figure 8: New Order Response Time Distribution



5.4.7 New Order Think Time Distribution

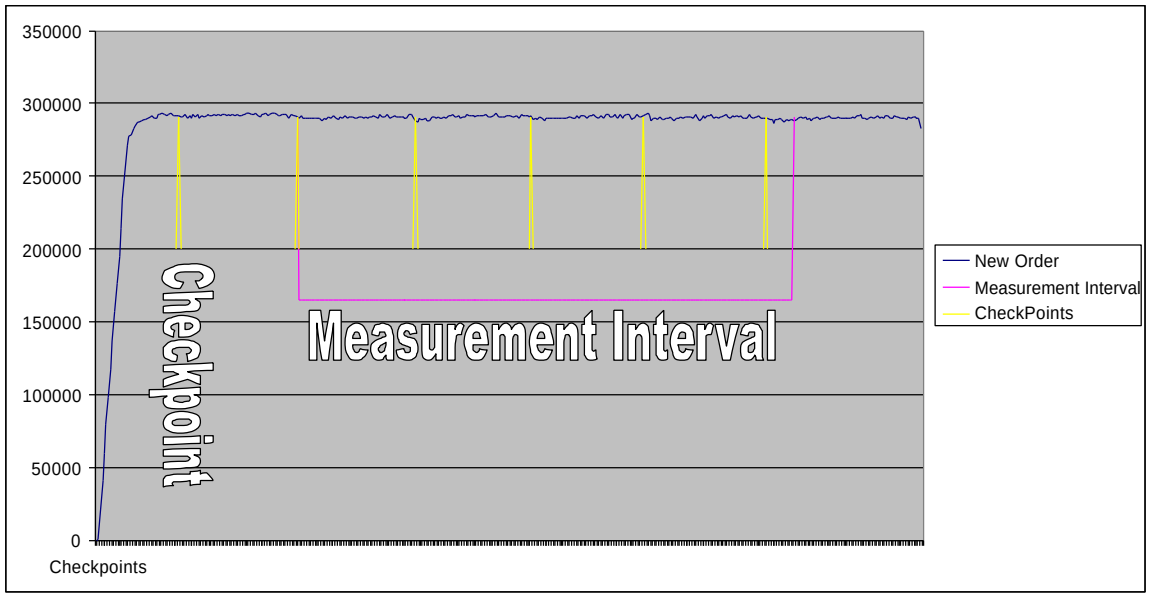
Figure 9: New Order Think Time Distribution



Think time frequency distribution for New Order transaction

5.4.8 Throughput Versus Time Distribution

Figure 10: New Order Throughput versus Time



5.5 Steady State Determination

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

The transaction throughput rate (tpmC®) and response time were relatively constant after the initial 'ramp up' period. The throughput and response time behaviors were determined by examining data reported for each interval over the duration of the benchmark. The corresponding graph is in Figure 10.

5.6 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.

The RTEs generated the required input data to choose a transaction from the menu. This data was timestamped. The menu response time for the requested transaction was verified and timestamped in the RTE log files. The RTE generated the required input data for the chosen transaction. It waited to complete the minimum required key time before transmitting the HTTP request to the client. The transmission was timestamped. The return of the screen with the required response data was timestamped. The difference between these two timestamps was the response time for that transaction and was logged in the RTE log. The RTE then waited the required think time interval before repeating the process and starting another transaction.

5.6.1 Checkpoint

The checkpoint mechanism is an automatic means for guaranteeing that completed transactions are regularly written from SQL Server's disk cache to the database device. A checkpoint writes all "dirty pages"-cached pages that have been modified since the last checkpoint-to the database device.

5.6.2 Checkpoint Conditions

There are two types of checkpoints:

1. Checkpoints that are executed automatically by SQL Server.

2. Checkpoints that are forced by database owners with the CHECKPOINT statement.

Forcing dirty pages onto the database device means that all completed transactions are written out. By causing all completed transactions to be written out, the checkpoint shortens the time it takes to recover, since the database pages are current and there are no transactions that need to be rolled forward.

5.6.3 Checkpoint Implementation

A Windows command script was issued to start manual checkpoints back to back. The "CHECKPOINT 1700" syntax in Microsoft SQL Server 2005 Enterprise Itanium Edition SP1 was used to force the checkpoints to an interval of 28 minutes, 20 seconds. The checkpoints were affinitized to a 2 processor SoftNuma node using tcp connection affinity. The script was run on the one of the web clients. By setting the TRACE FLAG #3502, SQL Server logged the checkpoint beginning and ending time in the ERRORLOG file.

At each checkpoint, Microsoft SQL Server 2005 Enterprise Itanium Edition SP1 wrote to disk all memory pages that had been updated but not yet physically written to disk. Upon completion of the checkpoint, Microsoft SQL Server 2005 Enterprise Itanium Edition SP1 wrote a special record to the recovery log to indicate that all disk operations had been satisfied to this point. The positioning of the checkpoint was verified to be clear of the guard zones.

5.7 Measurement Period Duration

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

The measurement interval was 120 minutes.

5.8 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 weighted average method of *Clause 5.2.4.1* was used. The weights were not adjusted during the run.

5.9 Transaction Mix

The percentage of the total mix for each transaction type must be disclosed.

Table 7: Transaction Mix

Type	Percentage
New Order	44.96%
Payment	43.01%
Delivery	4.01%
Stock Level	4.01%
Order Status	4.01%

5.10 Transaction Statistics

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 entered per New-Order transaction must be disclosed. The percentage of selections made 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.

Table 1 contains the required items.

5.11 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.

The measurement interval is 120 minutes. There are 4 checkpoints within the measurement interval and 2 checkpoint before the measurement interval.

Table 8: Measurement Interval and Checkpoints

Event	From	To
Measured Interval	17:34:47	19:34:47
Checkpoint	17:06:27	17:34:47
Checkpoint	17:34:48	18:03:08
Checkpoint	18:03:08	18:31:28
Checkpoint	18:31:28	18:59:48
Checkpoint	18:59:49	19:28:09
Checkpoint	19:28:09	19:56:29

Chapter 6 SUT, Driver and Communications Definition

6.1 RTE Description

If the RTE is commercially available, then its inputs must be specified. Otherwise, a description must be supplied of that input (e.g., scripts) to the RTE had been used. The RTE input parameters, code fragments, functions, et cetera used to generate each transaction input filed must be disclosed.

The RTE used is Microsoft BenchCraft and is commercially available. The RTE input parameters are listed in Appendix C – Tunable Parameters.

6.2 Emulated Components

It must be demonstrated that the functionality and performance of the components being used in the Driver System are equivalent to that of the priced system.

No components were emulated.

6.3 Functional Diagram

A complete functional diagram of the hardware and software of the benchmark configuration including the driver must be provided. the sponsor must list all hardware and software functionality of the driver and its interface to the SUT.

Functional diagrams of the measured and priced systems are included in the "General Items" section at the beginning of this report.

6.4 Networks

The network configuration of both the tested and proposed services which are being represented and a thorough explanation of exactly which parts are being replaced with the Driver System must be disclosed.

The "General Items" section includes diagrams of the network configurations of the benchmark and configured systems, and represent the driver connected via LAN.

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

A Gigabit network was used between the RTEs and the clients, another Gigabit network was used between the clients and the database server.

6.5 Operator Intervention

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

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

Chapter 7 Pricing

7.1 System Pricing

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, maintenance charges. Separate component pricing is recommended. The basis of all discounts used must be disclosed.

The details of the hardware, software and maintenance components of this system are reported in the front of this report as part of the executive summary.

All 3rd party quotations are included at the end of this report in Appendix E.

7.2 General Availability, Throughput and Price Performance

The committed delivery date for general availability (availability date) of products used in the price calculation must be reported. When the priced system includes 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.

A statement of the measured tpmC as well as the respective calculations for the 5-year pricing, price/performance and the availability date must be included.

Table 9: Throughput, Price Performance and Availability

Maximum qualified throughput:	290,644 tpmC
Price per tpmC:	$2.71 USD per tpmC
Availability:	Sept 1, 2006

7.3 Country Specific Pricing

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

The system is being priced for the United States of America.

7.4 Usage Pricing

For any usage pricing, the sponsor must disclose: Usage level at which the component was priced, a statement of the company policy allowing such pricing.

The component pricing based on usage is shown below:

- 4 Microsoft SQL Server 2005 Enterprise Itanium Edition SP1 per-processor licenses.
- Microsoft Windows Server 2003, Datacenter edition (64-bit)
- 8 Microsoft Windows 2000 Server licenses.
- 1 Microsoft Visual C++ 32bit Edition.

- 3 year support for hardware components

Chapter 8 Audit

8.1 Auditor's Information

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.

The test methodology and results of this TPC Benchmark C were audited by:

Performance Metrics
PO Box 984
140 Klamath Blvd
Klamath, CA 95548
(707) 482-0523
Fax (707) 482-0575

The auditor was Lorna Livingtree.
Requests for this Full Disclosure Report (FDR) should sent to:

Hewlett-Packard Company
WIE
10955 Tantau Avenue
Cupertino, CA 95014-0770 USA

A copy of the attestation letter received from the auditor follows:

March 9, 2006

MR. JASON GOERTZ
ISS Redmond Performance
Hewlett-Packard Company
14475 NE 24th St.
Bellevue, WA 98007

I have verified the TPC Benchmark™ C client/server for the following configuration:

Platform: HP Integrity rx4640-8

Database Manager: Microsoft SQL Server 2005 Enterprise Edition 64 bit

Operating System: Microsoft Windows Server 2003, Enterprise Edition 64 bit

Transaction Monitor: Microsoft COM+

Server:				
CPU's	Memory	Disks (total)	90% Response	TpmC
4 Intel Itanium 2 @ 1.6 Ghz	128 GB	14 @ 146 GB 756 @ 36 GB	0.53	**290,644**
8 Clients: ProLiant DL140 G2 each with:				
2 Pentium Xeon @ 3.6 Ghz	Main: 1 GB	1 @ 80 GB	Na	Na

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

- The transactions were correctly implemented.
- The database files were properly sized and populated for 25,000 warehouses, of which 23,174 were active during the measured interval.
- Inactive warehouses were verified to be unchanged during the performance run.
- The ACID properties were successfully demonstrated.
- Input data was generated according to the specified percentages.
- Eight hours of mirrored log space was present on the measured system.
- Eight hours of growth space for the dynamic tables was present on the measured system.
- The data for the 60 day space calculation was verified.
- The Measured cycle times were confirmed to have the correct response time delays.
- There were 231,740 user contexts present on the system.
- Each emulated users started with a different random number seed.
- The NURand constants used for C_last load and run were 123 and 110 respectively.

- The steady state portion of the test was 120 minutes.
- One checkpoint was taken after steady state and before the measured interval.
- Four checkpoints were contained completely inside the measured interval, and additional checkpoints continued after the measured interval closed.
- Checkpoint interval was verified to be less than 30 minutes.
- The system pricing was checked for major components and maintenance.
- Third party quotes were verified for compliance.

Auditor Notes:
None

Sincerely,

Lorna Livingtree
Auditor

Appendix A Source Code

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_RAN
GE,

        ERR_DELIVERY_CARRIER_INVALID,

        ERR_DELIVERY_MISSING_OCD_KE
Y,

        ERR_DELIVERY_THREAD_FAILED,

        ERR_GETPROCADDR_FAILED,

        ERR_HTML_ILL_FORMED,

        ERR_INVALID_SYNC_CONNECTION
,

        ERR_INVALID_TERMID,

        ERR_LOADDLL_FAILED,

        ERR_MAX_CONNECTIONS_EXCEED
ED,

        ERR_MEM_ALLOC_FAILED,

        ERR_MISSING_REGISTRY_ENTRIES
,

        ERR_NEWORDER_CUSTOMER_INV
ALID,

        ERR_NEWORDER_CUSTOMER_KEY,

        ERR_NEWORDER_DISTRICT_INVAL
ID,

        ERR_NEWORDER_FORM_MISSING_
DID,

        ERR_NEWORDER_ITEMID_INVALID
,

        ERR_NEWORDER_ITEMID_RANGE,

        ERR_NEWORDER_ITEMID_WITHOU
T_SUPPW,

        ERR_NEWORDER_MISSING_IID_KE
Y,

        ERR_NEWORDER_MISSING_QTY_K
EY,

        ERR_NEWORDER_MISSING_SUPPW
_KEY,
```

```
		ERR_NEWORDER_NOITEMS_ENTER
ED,
		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_INVALI
D,
		ERR_PAYMENT_CWI_INVALID,
		ERR_PAYMENT_DISTRICT_INVALID
,
		ERR_PAYMENT_HAM_INVALID,
		ERR_PAYMENT_HAM_RANGE,
		ERR_PAYMENT_LAST_NAME_TO_L
ONG,
		ERR_PAYMENT_MISSING_CDI_KEY,
		ERR_PAYMENT_MISSING_CID_CLT,
		ERR_PAYMENT_MISSING_CID_KEY,
		ERR_PAYMENT_MISSING_CLT,
		ERR_PAYMENT_MISSING_CLT_KEY,
		ERR_PAYMENT_MISSING_CWI_KEY
,
		ERR_PAYMENT_MISSING_DID_KEY
,
		ERR_PAYMENT_MISSING_HAM_KE
Y,
		ERR_STOCKLEVEL_MISSING_THRE
SHOLD_KEY,
		ERR_STOCKLEVEL_THRESHOLD_IN
VALID,
		ERR_STOCKLEVEL_THRESHOLD_RA
NGE,
		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_BLO
CK *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 *pValue, 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
*pECB, 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_B
LOCK		*pECB, int iTermId, char
*szBuffer);
```

```
void
ProcessPaymentForm(EXTENSION_CONTROL_BL
OCK *pECB, int iTermId, char *szBuffer);

void
ProcessOrderStatusForm(EXTENSION_CONTROL_
BLOCK *pECB, int iTermId, char *szBuffer);

void
ProcessDeliveryForm(EXTENSION_CONTROL_BL
OCK *pECB, int iTermId, char *szBuffer);
void
ProcessStockLevelForm(EXTENSION_CONTROL_B
LOCK *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_DATA *pOrderStatusData);
BOOL PostDeliveryInfo(long 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_ENGLISH,
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
 FILEFLAGSMASK 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 (DBLIB)\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", "Copyright ©
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 DISCARDABLE  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
        BOTTOMMARGIN, 88
    END
END
#endif    // APSTUDIO_INVOKED

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


#ifndef APSTUDIO_INVOKED
//////////////////////////////////////////////////////
//////////////////
//
// Generated from the TEXTINCLUDE 3 resource.
//
//////////////////////////////////////////////////////
//////////////////
#endif    // not APSTUDIO_INVOKED
```

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 <stdarg.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
distinguish input and output flavors
#define     OUTPUT_FORM             0
#define INPUT_FORM      1

char
            szMyComputerName[MAX_COMPUT
ERNAME_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 "420"
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;
HANDLE
                        *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

// Critical section to synchronize connection open
and close.
//
CRITICAL_SECTION hConnectCriticalSection;
#include "..\..\common\src\ReadRegistry.cpp"
/* FUNCTION: DllMain
 *
 * PURPOSE: This function is the entry point for
the DLL.  This implementation 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(szMyComputerN
ame, &dwSize);


            szMyComputerName[dwSize] = 0;

            }


            DisableThreadLibraryCalls((HMODU
LE)hModule);

            InitializeCriticalSection(&TermCritica
lSection);
```

```
        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_TUXED
O_new");

                if
(pCTPCC_TUXEDO_new == NULL)

                        throw
new CWEBCLNT_ERR(
ERR_GETPROCADDR_FAILED, 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_ENCIN
A_new");



        pCTPCC_ENCINA_post_init =
(TYPE_CTPCC_ENCINA*)
GetProcAddress(hLibInstanceTm,"CTPCC_ENCIN
A_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 pointer
to wrapper for class constructor

                pCTPCC_COM_new =
(TYPE_CTPCC_COM*)
GetProcAddress(hLibInstanceTm,"CTPCC_COM_n
ew");

                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 = LoadLibrary(
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(hLibInstanceDb,"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 constructor

                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 (dwNumDeliveryThreads)

                {

                        // Initialize delivery
delay critical section

                        //

                InitializeCriticalSection(&hConnectC
riticalSection);

                        // for deferred
delivery txns:

                        hDoneEvent =
CreateEvent( NULL, TRUE /* manual reset */,
FALSE /* initially not signalled */, NULL );

                InitializeCriticalSection(&DelBuffCriti
calSection);

                        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-
%2.2ds%2.2dms.log",
                Reg.szPath, Time.wYear % 100,
Time.wMonth, Time.wDay, Time.wHour,
Time.wMinute, Time.wSecond,
Time.wMilliseconds );
                        txnDelilog = new
CTxnLog(szLogFile, TXN_LOG_WRITE);

                        //write event into txn
log for START

                        txnDelilog-
>WriteCtrlRecToLog(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 CWEBCLNT_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_STOP,
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(&DelBuffCritic
alSection);

                        // Delete delivery
delay critical section

                        //

                DeleteCriticalSection(&hConnectCriti
calSection);

                }


                DeleteCriticalSection(&TermCriticalS
ection);

                if (hLibInstanceTm != NULL)

                        FreeLibrary(
hLibInstanceTm );

                hLibInstanceTm = NULL;


                if (hLibInstanceDb != NULL)

                        FreeLibrary(
hLibInstanceDb );

                hLibInstanceDb = NULL;


                Sleep(500);
```

```
                break;

                                default:

                /* nothing */;
                        }
                }
                catch (CBaseErr *e)
                {
                        TCHAR szMsg[256];

                        _sntprintf(szMsg,
sizeof(szMsg), "%s error, code %d: %s",

                e->ErrorTypeStr(), e->ErrorNum(),
e->ErrorText());

                WriteMessageToEventLog( szMsg );
                        delete e;

                TerminateExtension(0);
                        return FALSE;
                }
                catch (...)
                {

                WriteMessageToEventLog(TEXT("U
nhandled exception.  DLL could not load."));


                TerminateExtension(0);
                        return FALSE;
                }

                return TRUE;
}


/* FUNCTION: GetExtensionVersion
 *
 * PURPOSE: This function is called by the inet
service when the DLL is first loaded.
 *
 * ARGUMENTS:           HSE_VERSION_INFO
        *pVer           passed in structure in
which to place expected version number.
 *
 * RETURNS:             TRUE            inet
service expected return value.
 */

BOOL WINAPI
GetExtensionVersion(HSE_VERSION_INFO *pVer)
{
        pVer->dwExtensionVersion =
MAKELONG(HSE_VERSION_MINOR,
HSE_VERSION_MAJOR);
        lstrcpyn(pVer->lpszExtensionDesc,
"TPC-C Server.",
HSE_MAX_EXT_DLL_NAME_LEN);

        // TODO: why do we need this here
instead of in the DLL attach?
        if (Reg.eTxnMon == ENCINA)

        pCTPCC_ENCINA_post_init();

        return TRUE;
}

/* FUNCTION: TerminateExtension
 *
 * PURPOSE: This function is called by the inet
service when the DLL is about to be unloaded.  Release
all resources in anticipation of being unloaded.
 *
 * RETURNS:             TRUE            inet
service expected return value.
 */

BOOL WINAPI TerminateExtension( DWORD
dwFlags )
{
        if (pDeliHandles)
        {
                SetEvent( hDoneEvent
);
                for(DWORD i=0;
i<dwNumDeliveryThreads; i++)

        WaitForSingleObject(
pDeliHandles[i], INFINITE );
        }

        TermDeleteAll();
        return TRUE;
}


/* FUNCTION: HttpExtensionProc
 *

 * PURPOSE: This function is the main entry point
for the TPCC DLL. The internet service
 *                                      calls this
function passing in the http string.
 *
 * ARGUMENTS:
        EXTENSION_CONTROL_BLOCK
        *pECB           structure pointer to
passed in internet
 *



                                        service
information.
 *
 * RETURNS:             DWORD
        HSE_STATUS_SUCCESS

        connection can be dropped if error
 *

        HSE_STATUS_SUCCESS_AND_KEEP
_CONN           keep connect valid comment sent
 *
 * COMMENTS:            None
 *
 */

DWORD WINAPI
HttpExtensionProc(EXTENSION_CONTROL_BLOC
K *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].iTickCou
nt = 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_FORM:


                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(TermId,
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[TermId].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 data
        (LPCTSTR *)lpszStrings,    // array of
error strings
        NULL);                // no raw data


      (VOID)
DeregisterEventSource(hEventSource);
   }
}


/* FUNCTION: DeliveryWorkerThread
 *
 * PURPOSE: This function processes deferred
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.
 *                                      When a
delivery txn is posted, the semaphore is released.
After processing
 *                                      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(txnDelilog != NULL);

        try
        {
                if (Reg.eDB_Protocol
== ODBC)
                {
                        if
(Reg.dwConnectDelay > 0)
                        {

        // Synchronize connect (for VIA)

        //

        EnterCriticalSection(&hConnectCritic
alSection);


        Sleep(Reg.dwConnectDelay);


        pTxn = pCTPCC_ODBC_new(
Reg.szDbServer, Reg.szDbUser,
Reg.szDbPassword,




        szMyComputerName,
Reg.szDbName,



        Reg.szSPPrefix,
Reg.bCallNoDuplicatesNewOrder );


        LeaveCriticalSection(&hConnectCriti
calSection);
                        }
                }
                else
                {
                        if
(Reg.eDB_Protocol == DBLIB)

        pTxn = pCTPCC_DBLIB_new(
Reg.szDbServer, Reg.szDbUser,
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, User=%s,
Password=%s, Database=%s",

                e->ErrorText(), Reg.szDbServer,
Reg.szDbUser, Reg.szDbPassword,
Reg.szDbName );

                WriteMessageToEventLog( szTmp );
                        delete e;
                        goto ErrorExit;
                }
                catch (...)
                {

                WriteMessageToEventLog(TEXT("U
nhandled 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.TxnType =
TXN_REC_TYPE_TPCC_DELIV_DEF;


                // make a local copy of current
entry from delivery buffer and increment buffer
index

                EnterCriticalSection(&DelBuffCritical
Section);

                delivery =
*(pDelBuff+dwDelBuffBusyIndex);

                dwDelBuffFreeCount++;

                dwDelBuffBusyIndex++;

                if (dwDelBuffBusyIndex ==
dwDelBuffSize)          // wrap-around if at
end of buffer
                        dwDelBuffBusyIndex
= 0;


                LeaveCriticalSection(&DelBuffCritical
Section);


                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.TxnStartT0 =
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.TxnStartT0);

                txnDeliRec.DeltaTxnExec =
(int)(Get64BitTime(&trans_end) -
Get64BitTime(&trans_start));


                if (txnDelilog != NULL)

                        txnDelilog-
>WriteToLog(&txnDeliRec);
                                }
                        }
                        catch (CBaseErr *e)
                        {
                                char
szTmp[1024];
                                wsprintf(
szTmp, "%s Error (code %d) in Delivery Txn
thread. %s",

                                e->ErrorTypeStr(),
e->ErrorNum(), e->ErrorText() );

                WriteMessageToEventLog( szTmp );
```

```
                                        // log
the error txn

                txnDeliRec.TxnStatus = e-
>ErrorType();
                                        if
(txnDelilog != NULL)

                txnDelilog-
>WriteToLog(&txnDeliRec);

                                        delete e;
                        }
                        catch (...)
                        {
                                        //
unhandled exception; shouldn't happen; not
much we can do...

                WriteMessageToEventLog(TEXT("U
nhandled exception caught in
DeliveryWorkerThread."));
                        }
        }

ErrorExit:
        if (Reg.dwConnectDelay > 0)
        {
                // Synchronize
disconnect (for VIA)
                //

        EnterCriticalSection(&hConnectCritic
alSection);


        Sleep(Reg.dwConnectDelay);

                delete pTxn;


        LeaveCriticalSection(&hConnectCriti
calSection);
        }



        _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(long w_id, short
o_carrier_id)
{
        BOOL bError;

        EnterCriticalSection(&DelBuffCritical
Section);
        if (dwDelBuffFreeCount > 0)
        {
                bError = FALSE;

        (pDelBuff+dwDelBuffFreeIndex)-
>w_id                           = w_id;
        (pDelBuff+dwDelBuffFreeIndex)-
>o_carrier_id= o_carrier_id;

        GetLocalTime(&(pDelBuff+dwDelBu
ffFreeIndex)->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(&DelBuffCritical
Section);

        if (!bError)
                // increment worker
semaphore to wake up a worker thread
                ReleaseSemaphore(
hWorkerSemaphore, 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_BLO
CK *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],
szBuffer) )
                {
                        *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( szBuffer,
        "<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,
                "Configuration 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 Pool        =
<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,
Reg.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=6><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(szDatabase),
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 ==
TUXEDO)

        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_SinglePool );
                else if
(Reg.eDB_Protocol == ODBC)

        Term.pClientData[iNewTerm].pTxn
= pCTPCC_ODBC_new(     szServer, szUser,
szPassword, szMyComputerName,




        szDatabase, Reg.szSPPrefix,




        Reg.bCallNoDuplicatesNewOrder );

                else if
(Reg.eDB_Protocol == DBLIB)

        Term.pClientData[iNewTerm].pTxn
= pCTPCC_DBLIB_new( szServer, 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(&TermCriticalSe
ction);

        iTotal = 0;
        for(i=0; i<Term.iNumEntries; i++)
        {
                if
(Term.pClientData[i].iNextFree == -1)

        iTotal++;
        }

        LeaveCriticalSection(&TermCriticalS
ection);

        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_RAN
GE,                     "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_KE
Y,                      "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_EXCEED
ED,                     "No
connections available.  Max Connections is
probably too low."   },

                {
        ERR_MISSING_REGISTRY_ENTRIES
,
        "Required registry entries are
missing.  Rerun INSTALL to correct."     },
```

```
                {
        ERR_NEWORDER_CUSTOMER_INV
ALID,                   "New
Order customer id invalid data type, range = 1 to
3000."          },
                {
        ERR_NEWORDER_CUSTOMER_KEY,

        "New Order missing Customer key
\"CID*\"."

        },
                {
        ERR_NEWORDER_DISTRICT_INVAL
ID,                     "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_WITHOU
T_SUPPW,        "New Order Item_Id
field entered without a corresponding Supp_W."
        },
                {
        ERR_NEWORDER_MISSING_IID_KE
Y,                      "New
Order missing Item Id key \"IID*\"."

                        },
                {
        ERR_NEWORDER_MISSING_QTY_K
EY,                     "New
Order Missing Qty key \"Qty##*\"."


        },
                {
        ERR_NEWORDER_MISSING_SUPPW
_KEY,                   "New
Order missing Supp_W key \"SP##*\"."

                        },
                {
        ERR_NEWORDER_NOITEMS_ENTER
ED,                     "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_
SUPPW,                  "New
Order Qty field entered without a corresponding
Supp_W."                },
                {
        ERR_NEWORDER_SUPPW_INVALID
,       "New Order Supp_W invalid data
type must be numeric."
                },
                {
        ERR_NO_SERVER_SPECIFIED,

        "No Server name specified."




                },
                {
        ERR_ORDERSTATUS_CID_AND_CLT
,                       "Order
Status Only Customer ID or Last Name may be
entered, not both."     },
                {
        ERR_ORDERSTATUS_CID_INVALID,
                        "Order
Status Customer ID invalid, range must be
numeric 1 - 3000."      },
                {
        ERR_ORDERSTATUS_CLT_RANGE,

        "Order Status Customer last name
longer than 16 characters."
        },
                {
        ERR_ORDERSTATUS_DID_INVALID,
                        "Order
Status District invalid, value must be numeric 1 -
10."                    },
                {
        ERR_ORDERSTATUS_MISSING_CID
_CLT,                   "Order Status Either
Customer ID or Last Name must be entered."
                },
                {
        ERR_ORDERSTATUS_MISSING_CID
_KEY,                   "Order Status missing
Customer key \"CID*\"."

        },
                {
        ERR_ORDERSTATUS_MISSING_CLT
_KEY,                   "Order Status missing
Customer Last Name key \"CLT*\"."
                        },
                {
        ERR_ORDERSTATUS_MISSING_DID
_KEY,                   "Order Status missing
District key \"DID*\"."

        },
                {
        ERR_PAYMENT_CDI_INVALID,

        "Payment Customer district invalid
must be numeric."
                },
                {
        ERR_PAYMENT_CID_AND_CLT,

        "Payment Only Customer ID or Last
Name may be entered, not both."         },
                {
        ERR_PAYMENT_CUSTOMER_INVALI
D,
        "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_L
ONG,
        "Payment Customer last name
longer than 16 characters."
                        },
                {
        ERR_PAYMENT_MISSING_CDI_KEY,

        "Payment missing Customer district
key \"CDI*\"."
                        },
                {
        ERR_PAYMENT_MISSING_CID_CLT,

        "Payment Either Customer ID or
Last Name must be entered."
                },
                {
        ERR_PAYMENT_MISSING_CID_KEY,

        "Payment missing Customer Key
\"CID*\"."

        },
                {
        ERR_PAYMENT_MISSING_CLT_KEY,

        "Payment missing Customer Last
Name key \"CLT*\"."
                        },
```

```
                {
        ERR_PAYMENT_MISSING_CWI_KEY
,
        "Payment missing Customer
Warehouse key \"CWI*\"."
                },
                {
        ERR_PAYMENT_MISSING_DID_KEY
,
        "Payment missing District Key
\"DID*\"."

        },
                {
        ERR_PAYMENT_MISSING_HAM_KE
Y,
        "Payment missing Amount key
\"HAM*\"."

                },
                {
        ERR_STOCKLEVEL_MISSING_THRE
SHOLD_KEY, "Stock Level; missing Threshold key
\"TT*\"."
                },
                {
        ERR_STOCKLEVEL_THRESHOLD_IN
VALID,          "Stock Level;
Threshold value must be in the range = 1 - 99."
                },
                {
        ERR_STOCKLEVEL_THRESHOLD_RA
NGE,                    "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].szMsg[0] == 0)
                {
                        strcpy(
szTmp, "Unknown error number." );
                        break;
                }
                if (m_Error ==
errorMsgs[i].iError)
                {
                        strcpy(
szTmp, errorMsgs[i].szMsg );
                        break;
                }
                i++;
        }

        if (m_szTextDetail)
                strcat( szTmp,
m_szTextDetail );
        if (m_SystemErr)
                wsprintf(
szTmp+strlen(szTmp), "  Error=%d",
m_SystemErr );

        m_szErrorText = new
char[strlen(szTmp)+1];
        strcpy( m_szErrorText, szTmp );
        return m_szErrorText;

}

/* FUNCTION: GetKeyValue
 *
 * PURPOSE: This function parses a http
formatted string for specific key values.
 *
 * ARGUMENTS:       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 array.
 *
        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
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.
 */

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 http
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(&TermCriticalSe
ction);


        Term.iMasterSyncId      = 1;
        Term.iNumEntries        =
Reg.dwMaxConnections+1;

        Term.pClientData        = NULL;
        Term.pClientData        =
(PCLIENTDATA)malloc(Term.iNumEntries *
sizeof(CLIENTDATA));
        if (Term.pClientData == NULL)
        {

        LeaveCriticalSection(&TermCriticalS
ection);
                        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(&TermCriticalS
ection);
}

/* FUNCTION: TermDeleteAll
 *
 * 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(&TermCriticalSe
ction);

        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(&TermCriticalS
ection);
}

/* FUNCTION: TermAdd
 *
 * PURPOSE: This function assigns a terminal id
which is used to identify a client browser.
 *
 * RETURNS:             int
        assigned terminal id
 *
 */

int TermAdd(void)
{
        DWORD   i;
        int
        iNewTerm, iTickCount;

        if (Term.iNumEntries == 0)
                        return -1;

        EnterCriticalSection(&TermCriticalSe
ction);
        if (Term.iFreeList != 0)
        {               // position is available
                        iNewTerm =
Term.iFreeList;
                        Term.iFreeList =
Term.pClientData[iNewTerm].iNextFree;

        Term.pClientData[iNewTerm].iNext
Free = -1;  // indicates this position is in use
        }
        else
        {               // no open slots, so
find the slot that hasn't been used in the longest
time and reuse it
                        for(iNewTerm=1, i=1,
iTickCount=0x7FFFFFFF;
i<Reg.dwMaxConnections; i++)
                        {
                                        if
(iTickCount > Term.pClientData[i].iTickCount)
                                        {

        iTickCount =
Term.pClientData[i].iTickCount;

        iNewTerm = i;
                                        }
                        }
                        // if oldest term is less
than one minute old, it probably means that
more connections
                        // are being
attempted than were specified as "Max
Connections" at install.  In this case,
                        // do not bump
existing connection; instead, return error to
requestor.
                        if ((GetTickCount() -
iTickCount) < 60000)
                        {

        LeaveCriticalSection(&TermCriticalS
ection);
```

```
                                        throw
new CWEBCLNT_ERR(
ERR_MAX_CONNECTIONS_EXCEEDED );
                                }
        }

        Term.pClientData[iNewTerm].iTickC
ount = GetTickCount();
        Term.pClientData[iNewTerm].iSyncI
d = Term.iMasterSyncId++;
        Term.pClientData[iNewTerm].pTxn
= NULL;

        LeaveCriticalSection(&TermCriticalS
ection);
        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 TermDelete(int id)
{
        if ( id > 0 && id <
Term.iNumEntries )
        {
                delete
Term.pClientData[id].pTxn;

                // put onto free list

        EnterCriticalSection(&TermCriticalSe
ction);


        Term.pClientData[id].iNextFree =
Term.iFreeList;
                Term.iFreeList = id;


        LeaveCriticalSection(&TermCriticalS
ection);
        }
}


/* 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
TYPE=\"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(szForm,

        "<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
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>"
                , 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: %6.6d
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
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 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 ||
(pNewOrderData->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=\"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\">                       New
Order<BR>"
                                        , bValid ? 0 :
ERR_BAD_ITEM_ID, NEW_ORDER_FORM,
iTermId, Term.pClientData[iTermId].iSyncId);

                if ( bInput )
                {
                        c +=
wsprintf(szForm+c, "Warehouse: %6.6d   ",
Term.pClientData[iTermId].w_id );

                        strcpy( szForm+c,
                                        "District:
<INPUT NAME=\"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=\"IID00*\" SIZE=6>
<INPUT NAME=\"Qty00*\" SIZE=1><BR>"
                                        "
<INPUT NAME=\"SP01*\" SIZE=4>  <INPUT
NAME=\"IID01*\" SIZE=6>
<INPUT NAME=\"Qty01*\" SIZE=1><BR>"
                                        "
<INPUT NAME=\"SP02*\" SIZE=4>  <INPUT
NAME=\"IID02*\" SIZE=6>
<INPUT NAME=\"Qty02*\" SIZE=1><BR>"
                                        "
<INPUT NAME=\"SP03*\" SIZE=4>  <INPUT
NAME=\"IID03*\" SIZE=6>
<INPUT NAME=\"Qty03*\" SIZE=1><BR>"
                                        "
<INPUT NAME=\"SP04*\" SIZE=4>  <INPUT
NAME=\"IID04*\" SIZE=6>
<INPUT NAME=\"Qty04*\" SIZE=1><BR>"
<INPUT NAME=\"SP05*\" SIZE=4>  <INPUT
NAME=\"IID05*\" SIZE=6>
<INPUT NAME=\"Qty05*\" 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 NAME=\"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: %6.6d
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_tax: %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, "%6.6d %6.6d  %-24s %2.2d   %3.3d   %1.1s  $%6.2f  $%7.2f  <BR>",

                                pNewOrderData->OL[i].ol_supply_w_id,

                                pNewOrderData->OL[i].ol_i_id,

                                pNewOrderData->OL[i].ol_i_name,

                                pNewOrderData->OL[i].ol_quantity,

                                pNewOrderData->OL[i].ol_stock,

                                pNewOrderData->OL[i].ol_brand_generic,

                                pNewOrderData->OL[i].ol_i_price,

                                pNewOrderData->OL[i].ol_amount );
                                        }
                        }
                        else
                        {

                                c += wsprintf(szForm+c,


                "%Disc:<BR>"

                "Order Number: %8.8d  Number of Lines:          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 MakePaymentForm(int iTermId, PAYMENT_DATA *pPaymentData, BOOL bInput, char *szForm)
{
        int c;

        c = wsprintf(szForm,


        "<HTML><HEAD><TITLE>TPC-C Payment</TITLE></HEAD><BODY>"
                "<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
                "<INPUT TYPE=\"hidden\" NAME=\"STATUSID\" VALUE=\"0\">"
                "<INPUT TYPE=\"hidden\" NAME=\"ERROR\" VALUE=\"0\">"
                "<INPUT TYPE=\"hidden\" NAME=\"FORMID\" VALUE=\"%d\">"
                "<INPUT TYPE=\"hidden\" NAME=\"TERMID\" VALUE=\"%d\">"
                "<INPUT TYPE=\"hidden\" NAME=\"SYNCID\" VALUE=\"%d\">"
                "<PRE><font face=\"Courier\">
Payment<BR>"
                "Date: "
                , PAYMENT_FORM, iTermId, 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: %6.6d"
                                "
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:
<INPUT 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: %6.6d
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: %6.6d  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, pPaymentData->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, pPaymentData->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
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 MakeOrderStatusForm(int iTermId,
ORDER_STATUS_DATA *pOrderStatusData,
BOOL bInput, char *szForm)
{
                int                     i, c;
                static char szBR[] = " <BR> <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: %6.6d
",

                ORDER_STATUS_FORM, iTermId,
Term.pClientData[iTermId].iSyncId,
Term.pClientData[iTermId].w_id);

                if ( bInput )
```

```
        {
                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.hour,

        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, "  %6.6d     %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_delivery_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 bInput,
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:
%6.6d<BR> <BR>",
                (!bInput &&
(pDeliveryData->exec_status_code != eOK)) ?
ERR_TYPE_DELIVERY_POST : 0,
                DELIVERY_FORM,
iTermId, Term.pClientData[iTermId].iSyncId,
Term.pClientData[iTermId].w_id);

        if ( bInput )
        {
                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> <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(EXTENSION_CONTROL_B
LOCK          *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 ProcessPaymentForm
 *
 * 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_BL
OCK *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].pTxn-
>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 variables. 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_BL
OCK *pECB, int iTermId, char *szBuffer)
{
                char            *ptr = pECB-
>lpszQueryString;

                PDELIVERY_DATA
                pDelivery;

                pDelivery =
Term.pClientData[iTermId].pTxn-
>BuffAddr_Delivery();
                ZeroMemory(pDelivery,
sizeof(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_B
LOCK *pECB, 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
|| pStockLevel->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, szBuffer);
}

/* 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
        *pNewOrderData
        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_ORDER_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*",
"Qty07*", "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 = 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_NEWORDER_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_QTY_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;
		int			iLen;

		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(szTmp) >
LAST_NAME_LEN )
				throw
new CWEBCLNT_ERR(
ERR_PAYMENT_LAST_NAME_TO_LONG );

			strcpy(pPaymentData-
>c_last, szTmp);
			// pad with spaces so
that the client layer doesn't have to do it
			// before passing
parameters to stored procedure
			iLen =
strlen(pPaymentData->c_last);

		memset(pPaymentData->c_last +
iLen, ' ', LAST_NAME_LEN - iLen);
			pPaymentData-
>c_last[LAST_NAME_LEN] = 0;

		}
		else
		{		// parse customer id
and verify that last name was NOT entered
			GetKeyValue(&ptr,
"CLT*", szTmp, 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_ERR( 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;
		int			iLen;

		pOrderStatusData->d_id =
GetIntKeyValue(&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
			pOrderStatusData-
>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(szTmp) >
LAST_NAME_LEN )
				throw
new CWEBCLNT_ERR(
ERR_ORDERSTATUS_CLT_RANGE );


		strcpy(pOrderStatusData->c_last,
szTmp);

			// pad with spaces so
that the client layer doesn't have to do it
			// before passing
parameters to stored procedure
			iLen =
strlen(pOrderStatusData->c_last);

		memset(pOrderStatusData->c_last
+ iLen, ' ', LAST_NAME_LEN - iLen);
			pOrderStatusData-
>c_last[LAST_NAME_LEN] = 0;
		}
		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 all 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;
}


/*          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 <stdarg.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
defination 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
distinguish input and output flavors
#define     OUTPUT_FORM             0
#define INPUT_FORM      1

char
            szMyComputerName[MAX_COMPUT
ERNAME_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;
HANDLE
                        *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

// Critical section to synchronize connection open
and close.
//
CRITICAL_SECTION hConnectCriticalSection;

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

/* FUNCTION: DllMain
 *
 * PURPOSE: This function is the entry point for
the DLL.  This implementation 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(szMyComputerN
ame, &dwSize);


        szMyComputerName[dwSize] = 0;

        }


        DisableThreadLibraryCalls((HMODU
LE)hModule);

        InitializeCriticalSection(&TermCritica
lSection);


        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_TUXED
O_new");

                if
(pCTPCC_TUXEDO_new == NULL)

                        throw
new CWEBCLNT_ERR(
ERR_GETPROCADDR_FAILED, 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_ENCIN
A_new");


        pCTPCC_ENCINA_post_init =
(TYPE_CTPCC_ENCINA*)
GetProcAddress(hLibInstanceTm,"CTPCC_ENCIN
A_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 pointer 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 = LoadLibrary( 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(hLibInstanceDb,"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 constructor

                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 (dwNumDeliveryThreads)
                {
                        // Initialize delivery delay critical section
                        //
                InitializeCriticalSection(&hConnectCriticalSection);
                        // 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-%2.2ds%2.2dms.log",

                Reg.szPath, Time.wYear % 100, Time.wMonth, Time.wDay, Time.wHour, Time.wMinute, Time.wSecond, Time.wMilliseconds );

                        txnDelilog = new CTxnLog(szLogFile, TXN_LOG_WRITE);

                        //write event into txn log for START

                        txnDelilog->WriteCtrlRecToLog(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 CWEBCLNT_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_STOP,
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(&DelBuffCritic
alSection);

                        // Delete delivery
delay critical section
                        //


        DeleteCriticalSection(&hConnectCriti
calSection);

        }


        DeleteCriticalSection(&TermCriticalS
ection);


        if (hLibInstanceTm != NULL)

                FreeLibrary(
hLibInstanceTm );

        hLibInstanceTm = NULL;


        if (hLibInstanceDb != NULL)

                FreeLibrary(
hLibInstanceDb );

        hLibInstanceDb = NULL;


        Sleep(500);

        break;

                        default:

        /* nothing */;
                }
        }
        catch (CBaseErr *e)
        {
                TCHAR szMsg[256];

                _sntprintf(szMsg,
sizeof(szMsg), "%s error, code %d: %s",

        e->ErrorTypeStr(), e->ErrorNum(),
e->ErrorText());

        WriteMessageToEventLog( szMsg );
                delete e;


        TerminateExtension(0);
                return FALSE;
        }
        catch (...)
        {

        WriteMessageToEventLog(TEXT("U
nhandled exception.  DLL could not load."));

        TerminateExtension(0);
                return FALSE;
        }

        return TRUE;
}


/* FUNCTION: GetExtensionVersion
 *
 * PURPOSE: This function is called by the inet
service when the DLL is first loaded.
 * ARGUMENTS:           HSE_VERSION_INFO
        *pVer       passed in structure in
which to place expected version number.
 *
 * RETURNS:             TRUE        inet
service expected return value.
 */

BOOL WINAPI
GetExtensionVersion(HSE_VERSION_INFO *pVer)
{
        pVer->dwExtensionVersion =
MAKELONG(HSE_VERSION_MINOR,
HSE_VERSION_MAJOR);
        lstrcpyn(pVer->lpszExtensionDesc,
"TPC-C Server.",
HSE_MAX_EXT_DLL_NAME_LEN);

        // TODO: why do we need this here
instead of in the DLL attach?
        if (Reg.eTxnMon == ENCINA)

        pCTPCC_ENCINA_post_init();

        return TRUE;
}

/* FUNCTION: TerminateExtension
 *
 * PURPOSE: This function is called by the inet
service when the DLL is about to be unloaded.
 *                                      Release
all resources in anticipation of being unloaded.
 *
 * RETURNS:             TRUE        inet
service expected return value.
 */

BOOL WINAPI TerminateExtension( DWORD
dwFlags )
{
        if (pDeliHandles)
        {
                SetEvent( hDoneEvent
);
                for(DWORD i=0;
i<dwNumDeliveryThreads; i++)

        WaitForSingleObject(
pDeliHandles[i], INFINITE );
        }


        TermDeleteAll();
        return TRUE;
}


/* FUNCTION: HttpExtensionProc
 *
 * PURPOSE: This function is the main entry point
for the TPCC DLL. The internet service
 *                                      calls this
function passing in the http string.
 *
 * ARGUMENTS:
        EXTENSION_CONTROL_BLOCK
        *pECB       structure pointer to
passed in internet
```

```
 *
                                        service
information.
 *
 * RETURNS:             DWORD
        HSE_STATUS_SUCCESS

        connection can be dropped if error
 *
        HSE_STATUS_SUCCESS_AND_KEEP
_CONN   keep connect valid comment sent
 *
 * COMMENTS:            None
 *
 */

DWORD WINAPI
HttpExtensionProc(EXTENSION_CONTROL_BLOC
K *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].iTickCou
nt = 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_FORM:


        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(TermId,
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[TermId].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 data
         (LPCTSTR *)lpszStrings,    // array of error strings
         NULL);                // no raw data

      (VOID) DeregisterEventSource(hEventSource);
   }
}
```

```
/* FUNCTION: DeliveryWorkerThread
 *
 * PURPOSE: This function processes deferred 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.
 *                                                      When a delivery txn is posted, the semaphore is released.  After processing
 *                                                      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(txnDelilog != NULL);

		try
		{
			if (Reg.eDB_Protocol == ODBC)
			{
				if (Reg.dwConnectDelay > 0)
				{

		// Synchronize connect (for VIA)

		//


		EnterCriticalSection(&hConnectCriticalSection);


		Sleep(Reg.dwConnectDelay);


		pTxn = pCTPCC_ODBC_new( Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword,
```

```
		szMyComputerName, Reg.szDbName,


		Reg.szSPPrefix, Reg.bCallNoDuplicatesNewOrder );


		LeaveCriticalSection(&hConnectCriticalSection);
				}
			}
			else
			{
				if (Reg.eDB_Protocol == DBLIB)

		pTxn = pCTPCC_DBLIB_new( Reg.szDbServer, Reg.szDbUser, 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, User=%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.TxnType = 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.TxnStartT0 = 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.TxnStartT0);
		txnDeliRec.DeltaTxnExec = (int)(Get64BitTime(&trans_end) - Get64BitTime(&trans_start));


		if (txnDelilog != NULL)

			txnDelilog->WriteToLog(&txnDeliRec);
				}
			}
			catch (CBaseErr *e)
			{
				char szTmp[1024];
				wsprintf( szTmp, "%s Error (code %d) in Delivery Txn thread. %s",

				 e->ErrorTypeStr(), e->ErrorNum(), e->ErrorText() );

		WriteMessageToEventLog( szTmp );

				// log the error txn

		txnDeliRec.TxnStatus = e->ErrorType();
				if (txnDelilog != NULL)

		txnDelilog->WriteToLog(&txnDeliRec);

				delete e;
			}
			catch (...)
			{
				// unhandled exception; shouldn't happen; not much we can do...

		WriteMessageToEventLog(TEXT("Unhandled exception caught in DeliveryWorkerThread."));
			}
		}

ErrorExit:
		if (Reg.dwConnectDelay > 0)
		{
			// Synchronize disconnect (for VIA)
			//

		EnterCriticalSection(&hConnectCriticalSection);



		Sleep(Reg.dwConnectDelay);

			delete pTxn;


		LeaveCriticalSection(&hConnectCriticalSection);
		}
	}	_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(long w_id, short o_carrier_id)
{
		BOOL bError;

		EnterCriticalSection(&DelBuffCriticalSection);
		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( hWorkerSemaphore, 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_BLO
CK *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],
szBuffer) )
                        {
                                    *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( szBuffer,
            "<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,
            "Configuration 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 Pool       =
<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,
Reg.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=6><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(szDatabase),
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 ==
TUXEDO)

                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_SinglePool );
                                else if
(Reg.eDB_Protocol == ODBC)

                Term.pClientData[iNewTerm].pTxn
= pCTPCC_ODBC_new(     szServer, szUser,
szPassword, szMyComputerName,
                szDatabase, Reg.szSPPrefix,



                Reg.bCallNoDuplicatesNewOrder );
                                else if
(Reg.eDB_Protocol == DBLIB)

                Term.pClientData[iNewTerm].pTxn
= pCTPCC_DBLIB_new( szServer, 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(&TermCriticalSe
ction);

                iTotal = 0;
                for(i=0; i<Term.iNumEntries; i++)
                {
                                if
(Term.pClientData[i].iNextFree == -1)

                iTotal++;
                }

                LeaveCriticalSection(&TermCriticalS
ection);

                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_RAN
GE,                             "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_KE
Y,                              "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_EXCEED
ED,                             "No
connections available.  Max Connections is
probably too low."   },
                {
        ERR_MISSING_REGISTRY_ENTRIES
,
        "Required registry entries are
missing.  Rerun INSTALL to correct."     },
                {
        ERR_NEWORDER_CUSTOMER_INV
ALID,                           "New
Order customer id invalid data type, range = 1 to
3000."                  },
                {
        ERR_NEWORDER_CUSTOMER_KEY,

        "New Order missing Customer key
\"CID*\"."

        },
                {
        ERR_NEWORDER_DISTRICT_INVAL
ID,                             "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_WITHOU
T_SUPPW,                "New Order Item_Id
field entered without a corresponding Supp_W."
        },
                {
        ERR_NEWORDER_MISSING_IID_KE
Y,                              "New
Order missing Item Id key \"IID*\"."

                },
                {
        ERR_NEWORDER_MISSING_QTY_K
EY,                             "New
Order Missing Qty key \"Qty##*\"."

        },
                {
        ERR_NEWORDER_MISSING_SUPPW
_KEY,                           "New
Order missing Supp_W key \"SP##*\"."

                },
                {
        ERR_NEWORDER_NOITEMS_ENTER
ED,                             "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_
SUPPW,                          "New
Order Qty field entered without a corresponding
Supp_W."                },
                {
        ERR_NEWORDER_SUPPW_INVALID
,
        "New Order Supp_W invalid data
type must be numeric."
                },
                {
        ERR_NO_SERVER_SPECIFIED,

        "No Server name specified."


                },
                {
        ERR_ORDERSTATUS_CID_AND_CLT
,                               "Order
Status Only Customer ID or Last Name may be
entered, not both."     },
                {
        ERR_ORDERSTATUS_CID_INVALID,
                                "Order
Status Customer ID invalid, range must be
numeric 1 - 3000."      },
                {
        ERR_ORDERSTATUS_CLT_RANGE,

        "Order Status Customer last name
longer than 16 characters."
        },
                {
        ERR_ORDERSTATUS_DID_INVALID,
                                "Order
Status District invalid, value must be numeric 1 -
10."                    },
                {
        ERR_ORDERSTATUS_MISSING_CID
_CLT,                   "Order Status Either
Customer ID or Last Name must be entered."
                },
```

```
                {
        ERR_ORDERSTATUS_MISSING_CID
_KEY,           "Order Status missing
Customer key \"CID*\"."

        },
                {
        ERR_ORDERSTATUS_MISSING_CLT
_KEY,           "Order Status missing
Customer Last Name key \"CLT*\"."
                        },
                {
        ERR_ORDERSTATUS_MISSING_DID
_KEY,           "Order Status missing
District key \"DID*\"."

        },
                {
        ERR_PAYMENT_CDI_INVALID,

        "Payment Customer district invalid
must be numeric."
                },
                {
        ERR_PAYMENT_CID_AND_CLT,

        "Payment Only Customer ID or Last
Name may be entered, not both."         },
                {
        ERR_PAYMENT_CUSTOMER_INVALI
D,      "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_L
ONG,    "Payment Customer last name
longer than 16 characters."
                        },
                {
        ERR_PAYMENT_MISSING_CDI_KEY,

        "Payment missing Customer district
key \"CDI*\"."
                        },
                {
        ERR_PAYMENT_MISSING_CID_CLT,

        "Payment Either Customer ID or
Last Name must be entered."
                },
        ERR_PAYMENT_MISSING_CID_KEY,

        "Payment missing Customer Key
\"CID*\"."

        },
                {
        ERR_PAYMENT_MISSING_CLT_KEY,

        "Payment missing Customer Last
Name key \"CLT*\"."
                        },
                {
        ERR_PAYMENT_MISSING_CWI_KEY
,       "Payment missing Customer
Warehouse key \"CWI*\"."
                        },
                {
        ERR_PAYMENT_MISSING_DID_KEY
,       "Payment missing District Key
\"DID*\"."

        },
                {
        ERR_PAYMENT_MISSING_HAM_KE
Y,      "Payment missing Amount key
\"HAM*\"."

                },
                {
        ERR_STOCKLEVEL_MISSING_THRE
SHOLD_KEY, "Stock Level; missing Threshold key
\"TT*\"."
                        },
                {
        ERR_STOCKLEVEL_THRESHOLD_IN
VALID,          "Stock Level;
Threshold value must be in the range = 1 - 99."
                },
                {
        ERR_STOCKLEVEL_THRESHOLD_RA
NGE,                    "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].szMsg[0] == 0)
                {
                        strcpy(
szTmp, "Unknown error number." );
                        break;
                }
                if (m_Error ==
errorMsgs[i].iError)
                {
                        strcpy(
szTmp, errorMsgs[i].szMsg );
                        break;
                }
                i++;
        }

        if (m_szTextDetail)
                strcat( szTmp,
m_szTextDetail );
        if (m_SystemErr)
                wsprintf(
szTmp+strlen(szTmp), "  Error=%d",
m_SystemErr );

        m_szErrorText = new
char[strlen(szTmp)+1];
        strcpy( m_szErrorText, szTmp );
        return m_szErrorText;

}

/* FUNCTION: GetKeyValue
 *
 * PURPOSE: This function parses a http
formatted string for specific key values.
 *
 * ARGUMENTS:      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 array.
 *
        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
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.
 */

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 http
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(&TermCriticalSe
ction);

            Term.iMasterSyncId      = 1;
            Term.iNumEntries        =
Reg.dwMaxConnections+1;

            Term.pClientData        = NULL;
            Term.pClientData        =
(PCLIENTDATA)malloc(Term.iNumEntries *
sizeof(CLIENTDATA));
            if (Term.pClientData == NULL)
            {

            LeaveCriticalSection(&TermCriticalS
ection);
                      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(&TermCriticalS
ection);
}

/* FUNCTION: TermDeleteAll
 *
 * 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(&TermCriticalSe
ction);

        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(&TermCriticalS
ection);
}

/* FUNCTION: TermAdd
 *
 * PURPOSE: This function assigns a terminal id
which is used to identify a client browser.
 *
 * RETURNS:              int
        assigned terminal id
 *
 */

int TermAdd(void)
{
        DWORD   i;
        int
        iNewTerm, iTickCount;

        if (Term.iNumEntries == 0)
                return -1;

        EnterCriticalSection(&TermCriticalSe
ction);
        if (Term.iFreeList != 0)
        {       // position is available
                iNewTerm =
Term.iFreeList;
                Term.iFreeList =
Term.pClientData[iNewTerm].iNextFree;

        Term.pClientData[iNewTerm].iNext
Free = -1;  // indicates this position is in use
        }
        else
        {       // no open slots, so
find the slot that hasn't been used in the longest
time and reuse it
                for(iNewTerm=1, i=1,
iTickCount=0x7FFFFFFF;
i<Reg.dwMaxConnections; i++)
                {
                        if
(iTickCount > Term.pClientData[i].iTickCount)
                        {
                                iTickCount =
Term.pClientData[i].iTickCount;
                                iNewTerm = i;
                        }
                }
                // if oldest term is less
than one minute old, it probably means that
more connections
                // are being
attempted than were specified as "Max
Connections" at install.  In this case,
                // do not bump
existing connection; instead, return error to
requestor.
                if ((GetTickCount() -
iTickCount) < 60000)
                {

        LeaveCriticalSection(&TermCriticalS
ection);
                        throw
new CWEBCLNT_ERR(
ERR_MAX_CONNECTIONS_EXCEEDED );
                }
        }

        Term.pClientData[iNewTerm].iTickC
ount = GetTickCount();
        Term.pClientData[iNewTerm].iSyncI
d = Term.iMasterSyncId++;
        Term.pClientData[iNewTerm].pTxn
= NULL;

        LeaveCriticalSection(&TermCriticalS
ection);
        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 TermDelete(int id)
{
        if ( id > 0 && id <
Term.iNumEntries )
        {
                delete
Term.pClientData[id].pTxn;

                // put onto free list

        EnterCriticalSection(&TermCriticalSe
ction);


        Term.pClientData[id].iNextFree =
Term.iFreeList;
                Term.iFreeList = id;


        LeaveCriticalSection(&TermCriticalS
ection);
        }
}

/* 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
TYPE=\"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(szForm,

        "<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
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>"
                        , 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: %6.6d
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
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 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 ||
(pNewOrderData->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=\"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\">                       New
Order<BR>"
                        , bValid ? 0 :
ERR_BAD_ITEM_ID, NEW_ORDER_FORM,
iTermId, Term.pClientData[iTermId].iSyncId);

                if ( bInput )
                {
                        c +=
wsprintf(szForm+c, "Warehouse: %6.6d   ",
Term.pClientData[iTermId].w_id );

                        strcpy( szForm+c,
                                "District:
<INPUT NAME=\"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=\"IID00*\" SIZE=6>
<INPUT NAME=\"Qty00*\" SIZE=1><BR>"
                                        "
<INPUT NAME=\"SP01*\" SIZE=4>  <INPUT
NAME=\"IID01*\" SIZE=6>
<INPUT NAME=\"Qty01*\" SIZE=1><BR>"
                                        "
<INPUT NAME=\"SP02*\" SIZE=4>  <INPUT
NAME=\"IID02*\" SIZE=6>
<INPUT NAME=\"Qty02*\" SIZE=1><BR>"
                                        "
<INPUT NAME=\"SP03*\" SIZE=4>  <INPUT
NAME=\"IID03*\" SIZE=6>
<INPUT NAME=\"Qty03*\" SIZE=1><BR>"
                                        "
<INPUT NAME=\"SP04*\" SIZE=4>  <INPUT
NAME=\"IID04*\" SIZE=6>
<INPUT NAME=\"Qty04*\" SIZE=1><BR>"
                                        "
<INPUT NAME=\"SP05*\" SIZE=4>  <INPUT
NAME=\"IID05*\" SIZE=6>
<INPUT NAME=\"Qty05*\" 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 NAME=\"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: %6.6d
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_tax: %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, "%6.6d
%6.6d  %-24s  %2.2d   %3.3d   %1.1s
$%6.2f  $%7.2f  <BR>",
                                                pNewOrderData-
>OL[i].ol_supply_w_id,

                                                pNewOrderData-
>OL[i].ol_i_id,


                                                pNewOrderData-
>OL[i].ol_i_name,

                                                pNewOrderData-
>OL[i].ol_quantity,

                                                pNewOrderData-
>OL[i].ol_stock,

                                                pNewOrderData-
>OL[i].ol_brand_generic,

                                                pNewOrderData-
>OL[i].ol_i_price,

                                                pNewOrderData-
>OL[i].ol_amount );
                                                }
                                        }
                                        else
                                        {
                                                c +=
wsprintf(szForm+c,

                "%Disc:<BR>"

                "Order Number: %8.8d  Number of
Lines:          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 MakePaymentForm(int iTermId,
PAYMENT_DATA *pPaymentData, BOOL bInput,
char *szForm)
{
                int c;

                c = wsprintf(szForm,

                "<HTML><HEAD><TITLE>TPC-C
Payment</TITLE></HEAD><BODY>"
                                        "<FORM
ACTION=\"tpcc.dll\" METHOD=\"GET\">"
                                        "<INPUT
TYPE=\"hidden\" NAME=\"STATUSID\"
VALUE=\"0\">"
                                        "<INPUT
TYPE=\"hidden\" NAME=\"ERROR\"
VALUE=\"0\">"
                                        "<INPUT
TYPE=\"hidden\" NAME=\"FORMID\"
VALUE=\"%d\">"
                                        "<INPUT
TYPE=\"hidden\" NAME=\"TERMID\"
VALUE=\"%d\">"
                                        "<INPUT
TYPE=\"hidden\" NAME=\"SYNCID\"
VALUE=\"%d\">"
                                        "<PRE><font
face=\"Courier\">
Payment<BR>"
                                        "Date: "
                                        , PAYMENT_FORM,
iTermId, Term.pClientData[iTermId].iSyncId);

                if ( !bInput )
                {
                                        c +=
wsprintf(szForm+c, "%2.2d-%2.2d-%4.d
%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: %6.6d"
                                        "
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:
<INPUT 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: %6.6d
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: %6.6d  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, pPaymentData->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, pPaymentData->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 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 MakeOrderStatusForm(int iTermId, ORDER_STATUS_DATA *pOrderStatusData, BOOL bInput, char *szForm)
{
                int                     i, c;
                static char szBR[] = " <BR> <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: %6.6d ",

                ORDER_STATUS_FORM, iTermId, Term.pClientData[iTermId].iSyncId, Term.pClientData[iTermId].w_id);

                if ( bInput )
                {
                                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.hour,

                                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, "  %6.6d     %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_delivery_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 bInput,
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:
%6.6d<BR> <BR>",
                                (!bInput &&
(pDeliveryData->exec_status_code != eOK)) ?
ERR_TYPE_DELIVERY_POST : 0,
                                DELIVERY_FORM,
iTermId, Term.pClientData[iTermId].iSyncId,
Term.pClientData[iTermId].w_id);

                if ( bInput )
                {
                                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> <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(EXTENSION_CONTROL_B
LOCK          *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 ProcessPaymentForm
 *
 * 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_BL
OCK *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].pTxn-
>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 variables. 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_BL
OCK *pECB, int iTermId, char *szBuffer)
{
                char            *ptr = pECB-
>lpszQueryString;
                PDELIVERY_DATA
                pDelivery;

                pDelivery =
Term.pClientData[iTermId].pTxn-
>BuffAddr_Delivery();
                ZeroMemory(pDelivery,
sizeof(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_B
LOCK *pECB, 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
|| pStockLevel->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, szBuffer);
}

/* 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
                *pNewOrderData
                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_ORDER_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*",
"Qty07*", "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 = 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_NEWORDER_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_QTY_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;
        int             iLen;

        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(szTmp) >
LAST_NAME_LEN )
                        throw
new CWEBCLNT_ERR(
ERR_PAYMENT_LAST_NAME_TO_LONG );

                strcpy(pPaymentData-
>c_last, szTmp);
                // pad with spaces so
that the client layer doesn't have to do it
                // before passing
parameters to stored procedure
                iLen =
strlen(pPaymentData->c_last);

        memset(pPaymentData->c_last +
iLen, ' ', LAST_NAME_LEN - iLen);
                pPaymentData-
>c_last[LAST_NAME_LEN] = 0;
        }
        else
        {       // parse customer id
and verify that last name was NOT entered
                GetKeyValue(&ptr,
"CLT*", szTmp, 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_ERR( 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;
		int			iLen;

		pOrderStatusData->d_id =
GetIntKeyValue(&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
			pOrderStatusData-
>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(szTmp) >
LAST_NAME_LEN )
				throw
new CWEBCLNT_ERR(
ERR_ORDERSTATUS_CLT_RANGE );


		strcpy(pOrderStatusData->c_last,
szTmp);
			// pad with spaces so
that the client layer doesn't have to do it
			// before passing
parameters to stored procedure
			iLen =
strlen(pOrderStatusData->c_last);

		memset(pOrderStatusData->c_last
+ iLen, ' ', LAST_NAME_LEN - iLen);
			pOrderStatusData-
>c_last[LAST_NAME_LEN] = 0;
		}
		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 all 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/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
```

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 dwMaxPendingDeliveries;
        DWORD
dwNumberOfDeliveryThreads;
        char szPath[128];
        char szDbServer[32];
        char szDbName[32];
        char szDbUser[32];
        char szDbPassword[32];
        wchar_t szSPPrefix[32];
        //tpcc_odbc.dll stored procedures
prefix
        DWORD dwConnectDelay; // delay
in ms to use in pacing connection open and close
        BOOL bCallNoDuplicatesNewOrder;
        // whether to check for non-
duplicate item ids and call a different New Order
SP
} TPCCREGISTRYDATA, *PTPCCREGISTRYDATA;

BOOL ReadTPCCRegistrySettings(
TPCCREGISTRYDATA *pReg );

);
```

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
version
 */


/* FUNCTION: ReadTPCCRegistrySettings

 * PURPOSE: This function reads the NT registry
for startup parameters. There parameters are
 *                                      under
the TPCC key.
 *
 * RETURNS  FALSE = no errors
 *                                      TRUE  =
error reading registry
 */
BOOL ReadTPCCRegistrySettings(
TPCCREGISTRYDATA *pReg )
{
        HKEY        hKey;
        DWORD       size;
        DWORD       type;
        DWORD       dwTmp;
        char        szTmp[256];


        if (
RegOpenKeyEx(HKEY_LOCAL_MACHINE,
"SOFTWARE\\Microsoft\\TPCC", 0, KEY_READ,
&hKey) != ERROR_SUCCESS )
                return TRUE;

        // determine database protocol to
use; may be either ODBC or DBLIB
        pReg->eDB_Protocol =
Unspecified;
        size = sizeof(szTmp);
        if ( RegQueryValueEx(hKey,
"DB_Protocol", 0, &type, (BYTE *)&szTmp, &size)
== ERROR_SUCCESS )
        {
                if ( !stricmp(szTmp,
szDBNames[ODBC]) )
                        pReg-
>eDB_Protocol = ODBC;
                else if (
!stricmp(szTmp, szDBNames[DBLIB]) )
                        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;

        size = sizeof( pReg->szSPPrefix );
        if ( RegQueryValueExW(hKey,
L"SPPrefix", 0, &type, (BYTE *)&pReg-
>szSPPrefix, &size) != ERROR_SUCCESS )
```

```
                        pReg->szSPPrefix[0]
= L'\0';

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

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

        RegCloseKey(hKey);

        return FALSE;
}
```

common\src\error.h

```
/*      FILE:
        ERROR.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 error
exception classes.
 *
 *  Change history:
 *                  4.20.000 - updated
rev number to match kit
 *                  4.21.000 - fixed bug:
~CBaseErr needed 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 _SERRORMSG
{
        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_BASE

                        24
        //Framework errors
#define     ERR_BUF_OVERFLOW

                        25
        //Buffer overflow during receive
#define ERR_TYPE_SOAP_HTTP

                        26
        //HTTP/SOAP dll generated error
#define ERR_TYPE_OLEDB

                        27
        //OLE-DB generated error
```

```
#define ERR_TYPE_TPCC_OLEDB
                        28
        //error from tpcc ole-db txn module
// 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_TYPE_THINK_LIST
                        58
//------ end TPC-W ----------
#define ERR_TYPE_XML_PROFILE
        59
// TPC-E error types
#define ERR_TYPE_TPCE_CONN
                        60
        //TPC-E pipe connection errors
#define ERR_TYPE_TPCE_RTE
                        61
        //TPC-E Rte errors
#define ERR_TYPE_TPCE_ENG_BASE
        62                      //Tpce
Driver engine errors
#define ERR_TYPE_TPCE_ENG_OS
        63                      //Tpce
Driver engine system errors
//#define ERR_TYPE_TPCE_MEE_ENG_BASE
        64                      //Tpce
MEE Driver engine errors
//#define ERR_TYPE_TPCE_MEE_ENG_OS
        65                      //Tpce
MEE Driver engine system errors

#define ERR_INS_MEMORY
                        "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 receive HTML pages."


class CBaseErr
{
public:
        enum Action
        {
                eNone = 0
        };

        CBaseErr(LPCTSTR szLoc = NULL)
        {
                m_idMsg
        = GetLastError();       //take
the error code immediatelly before it is reset by
other functions


                if (szLoc)
                {
                        m_szLoc
= new char[strlen(szLoc)+1/*m_szLoc_size*/];

        strcpy(m_szLoc, szLoc);
                }
                else
                        m_szLoc
        = NULL;

                m_szApp
        = new char[m_szApp_size];

        GetModuleFileName(GetModuleHan
dle(NULL), m_szApp, m_szApp_size);
        }



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


                if (szLoc)
                {
                        m_szLoc
= new char[strlen(szLoc)+1/*m_szLoc_size*/];

        strcpy(m_szLoc, szLoc);
                }
                else
                        m_szLoc
        = NULL;

                m_szApp
        = new char[m_szApp_size];

        GetModuleFileName(GetModuleHan
dle(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 *ErrorTypeStr() = 0; //
text representation of the error type
        virtual char *ErrorText() = 0; // a
string (i.e., human readable) representation of
the error
        virtual int ErrorAction() { return
eNone; }     // the function call that caused 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,

        eWSAGetOverlappedResult,
                eWSARecv,


        eWSAWaitForMultipleEvents,
                eWSAStartup,
                eWSAResetEvent,

        eWSAEnumNetworkEvents,
                eWSAEventSelect,
                eSelect,
                eAccept,
                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*       ErrorTypeStr() {
return "SOCKET"; }
        char*       ErrorText(void);
        int
        ErrorAction() { return
(int)m_eAction; }

};

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,
                eRegSetValueEx,
                eRegEnumValue,
                eRegCreateKeyEx,

        eWaitForMultipleObjects,
                eRegisterClassEx,
                eCreateWindow,
                eCreateSemaphore,
                eReleaseSemaphore,
                eFSeek,
                eFRead,
                eFWrite,
                eTmpFile,
                eSetFilePointer,
                eNew,
                eCloseHandle,
                eGetOverlappedResult
        };


        CSystemErr(Action eAction,
LPCTSTR szLocation);

        CSystemErr(int iError, Action
eAction, LPCTSTR szLocation);
        int
        ErrorType() { return
ERR_TYPE_OS;};
        char*       ErrorTypeStr() {
return "SYSTEM"; }
        char        *ErrorText(void);
        int
        ErrorAction() { return
(int)m_eAction; }
        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*       ErrorTypeStr() {
return "OUT OF MEMORY"; }
        char*       ErrorText() {return
ERR_INS_MEMORY;}
};


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

        int
        ErrorType() {return
ERR_BUF_OVERFLOW;}
        char*       ErrorTypeStr() {
return "BUFFER OVERFLOW"; }
        char*       ErrorText() {return
ERR_INS_BUF_OVERFLOW;}
};

// Exception type for XML profiles
class CXMLProfileErr : public CBaseErr
{
public:     enum Action
            {

        LoadProfile = 1,

        LoadSchema,

        ValidateProfile,

        SaveProfile,

        LoadFromXML,

        SaveToXML,

        ApplyProcessingInstruction,

        ApplyAttribute,

        ApplyNode
                };

                CXMLProfileErr(Action
eAction, int eCode, LPCTSTR szLocation)
                {

        m_eAction = eAction;

        m_eCode = eCode;


        m_bOverload = true;

                };
                CXMLProfileErr(Action
eAction, int eCode, LPCTSTR szLocation, char *
szMsg)
                {

        m_eAction = eAction;

        m_eCode = eCode;

        strcpy(m_szMsg, szMsg);

        m_bOverload = false;
                };

                virtual int
        ErrorType() { return
ERR_TYPE_XML_PROFILE;};
                virtual char
        *ErrorTypeStr() { return "XML
PROFILE"; };
                virtual char
        *ErrorText();
                virtual int
        ErrorCode() { return m_eCode; };
                int

        ErrorAction() { return
(int)m_eAction; }
                //virtual void
        Draw(HWND hwnd, LPCTSTR szStr
= NULL)
                //{
                //
        ::MessageBox(hwnd, szStr,
m_szLoc, MB_OK);
                //};
        private:
                char
        m_szMsg[ERR_MSG_BUF_SIZE];
                LPCTSTR m_szLoc;
```

```
                int
        m_eCode;
                bool
        m_bOverload;
                Action
        m_eAction;

};
```

common\src\trans.h

```
/*      FILE:
        ERROR.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 error
exception classes.
 *
 *  Change history:
 *              4.20.000 - updated
rev number to match kit
 *              4.21.000 - fixed bug:
~CBaseErr needed 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 _SERRORMSG
{
        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
#define ERR_TYPE_TXNLOG
        //delivery server error

                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_BASE

                24
        //Framework errors
#define ERR_BUF_OVERFLOW

                25
        //Buffer overflow during receive
#define ERR_TYPE_SOAP_HTTP

                26
        //HTTP/SOAP dll generated error
#define ERR_TYPE_OLEDB

                27
        //OLE-DB generated error
#define ERR_TYPE_TPCC_OLEDB

                28
        //error from tpcc ole-db txn module
// 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_TYPE_THINK_LIST
                58
//------ end TPC-W ----------
#define ERR_TYPE_XML_PROFILE
                59
// TPC-E error types
#define ERR_TYPE_TPCE_CONN
                60
                //TPC-E pipe connection errors
#define ERR_TYPE_TPCE_RTE
                61
                //TPC-E Rte errors
#define ERR_TYPE_TPCE_ENG_BASE
                62              //Tpce
Driver engine errors
#define ERR_TYPE_TPCE_ENG_OS
                63              //Tpce
Driver engine system errors
//#define ERR_TYPE_TPCE_MEE_ENG_BASE
                64              //Tpce
MEE Driver engine errors
//#define ERR_TYPE_TPCE_MEE_ENG_OS
                65              //Tpce
MEE Driver engine system errors

#define ERR_INS_MEMORY
                "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 receive HTML pages."



class CBaseErr
{
public:
        enum Action
        {
                eNone = 0
        };

        CBaseErr(LPCTSTR szLoc = NULL)
        {
                m_idMsg
        = GetLastError();       //take
the error code immediatelly before it is reset by
other functions
                if (szLoc)
                        m_szLoc
= new char[strlen(szLoc)+1/*m_szLoc_size*/];

        strcpy(m_szLoc, szLoc);
                }
                else
                        m_szLoc
        = NULL;

                m_szApp
        = new char[m_szApp_size];

        GetModuleFileName(GetModuleHan
dle(NULL), m_szApp, m_szApp_size);
        }



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


                if (szLoc)
                {
                        m_szLoc
= new char[strlen(szLoc)+1/*m_szLoc_size*/];

        strcpy(m_szLoc, szLoc);
                }
                else
                        m_szLoc
        = NULL;

                m_szApp
        = new char[m_szApp_size];

        GetModuleFileName(GetModuleHan
dle(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 *ErrorTypeStr() = 0; //
text representation of the error type
        virtual char *ErrorText() = 0; // a
string (i.e., human readable) representation of
the error
        virtual int ErrorAction() { return
eNone; }     // the function call that caused 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,

        eWSAGetOverlappedResult,
                eWSARecv,


        eWSAWaitForMultipleEvents,
                eWSAStartup,
                eWSAResetEvent,

        eWSAEnumNetworkEvents,
                eWSAEventSelect,
                eSelect,
                eAccept,
                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*       ErrorTypeStr() {
return "SOCKET"; }
        char*       ErrorText(void);
        int
        ErrorAction() { return
(int)m_eAction; }

};

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,
                eReleaseSemaphore,
                eFSeek,
                eFRead,
                eFWrite,
                eTmpFile,
                eSetFilePointer,
                eNew,
                eCloseHandle,
                eGetOverlappedResult
        };
        CSystemErr(Action eAction,
LPCTSTR szLocation);
        CSystemErr(int iError, Action
eAction, LPCTSTR szLocation);
        int
        ErrorType() { return
ERR_TYPE_OS;};
        char*       ErrorTypeStr() {
return "SYSTEM"; }
        char        *ErrorText(void);
        int
        ErrorAction() { return
(int)m_eAction; }
        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*       ErrorTypeStr() {
return "OUT OF MEMORY"; }
        char*       ErrorText() {return
ERR_INS_MEMORY;}
};


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

        int
        ErrorType() {return
ERR_BUF_OVERFLOW;}
        char*       ErrorTypeStr() {
return "BUFFER OVERFLOW"; }
        char*       ErrorText() {return
ERR_INS_BUF_OVERFLOW;}
};

// Exception type for XML profiles
class CXMLProfileErr : public CBaseErr
{
        public:
                enum Action
                {

        LoadProfile = 1,

        LoadSchema,

        ValidateProfile,

        SaveProfile,

        LoadFromXML,

        SaveToXML,

        ApplyProcessingInstruction,

        ApplyAttribute,
        ApplyNode   };

                CXMLProfileErr(Action
eAction, int eCode, LPCTSTR szLocation)
                {

        m_eAction = eAction;

        m_eCode = eCode;

        m_bOverload = true;
                };
                CXMLProfileErr(Action
eAction, int eCode, LPCTSTR szLocation, char *
szMsg)
                {

        m_eAction = eAction;

        m_eCode = eCode;

        strcpy(m_szMsg, szMsg);

        m_bOverload = false;
                };

                virtual int
        ErrorType() { return
ERR_TYPE_XML_PROFILE;};
                virtual char
        *ErrorTypeStr() { return "XML
PROFILE"; };

                virtual char
        *ErrorText();
                virtual int
        ErrorCode() { return m_eCode; };
                int

        ErrorAction() { return
(int)m_eAction; }
                //virtual void
        Draw(HWND hwnd, LPCTSTR szStr
= NULL)
                //{
                //
        ::MessageBox(hwnd, szStr,
m_szLoc, MB_OK);
                //};
        private:
                char
        m_szMsg[ERR_MSG_BUF_SIZE];
                LPCTSTR m_szLoc;
                int
        m_eCode;
                bool
        m_bOverload;
                Action
        m_eAction;

};
```

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_STATUS_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

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reserved.
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 * 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
 *
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reserved.
 *
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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: 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 locking 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 Spinlock & 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 sleepers.
         *

*****************************************
***************/

        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
 *
 */
#include <stdio.h>
        //needed for FILE

#define DRIVER_NAME_LEN

        32          //max length of the
driver engine name - must be the same as in
engstut.h!
#define TXN_LOG_INCORRECTLY_SHUT_DOWN
        100         //ctrl rec subtype
generated by the txn log when reading an
abruptly shut down log

#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_DELIV_DEF     3

        #define TXN_REC_TYPE_TPCW
                4
        // replaces
TRANSACTION_TYPE_TPCW



        typedef struct
_TXN_RECORD_HEADER
        {
                JULIAN_TIME
        TxnStartT0;             // 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_CONTROL
        {
                // common header;
must exactly match TXN_RECORD_HEADER
                JULIAN_TIME
        TxnStartT0;             // start
of txn
                BYTE
        TxnType;
        // = TXN_REC_TYPE_CONTROL
                BYTE
        TxnSubType;
        // depends on TxnType
                // end of common
header

                DWORD       Len;

        // number of bytes after this field
        } TXN_RECORD_CONTROL,
*PTXN_RECORD_CONTROL;
```

```
		// TPC-C Txn Record Layout:
		//
	//'TxnStartT0' is a Julian timestamp
corresponding to the moment the
	//txn is sent to the SUT, i.e., beginning of
response time.  Deltas
	//are in milliseconds.  Note that if RTDelay >
0, then the txn was
	//delayed by this amount.  The delay occurs at
the beginning of the
	//response time.  So if RTDelay > 0, then the
txn was actually sent
	//at TxnStartT0 + RTDelay.
	//
	//Graphically:
	//
	//  time -->
	//
	//    |--- Menu  ---|-- Keying  --|-- Response --
|--- Think  --|
	//     <- DeltaT1 -> <- DeltaT2 -> <- DeltaT4
-> <- DeltaT3 ->
	//                        ^
	//                        ^ TxnStartT0
	//
	//RTDelay is the amount of response time
delay included in DeltaT4.
	//RTDelay is recorded per txn because this
value can be changed on
	//the fly, and so may vary from txn to txn.
	//
	//TxnStatus is the txn completion code.  It is
used to indicate errors.
	//For example, in the New Order txn, 1% of
txns abort.  TxnStatus will
	//reflect this.

		typedef struct
_TXN_RECORD_TPCC
		{
			// common header;
must exactly match TXN_RECORD_HEADER
			JULIAN_TIME
		TxnStartT0;		// start
of txn
			BYTE
		TxnType;
		// = TXN_REC_TYPE_TPCC
			BYTE
		TxnSubType;
		// depends on TxnType
			// end of common
header

			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;	//

			bool
IsSuccessRecord() { return (TxnStatus ==
ERR_SUCCESS || TxnStatus ==
ERR_BAD_ITEM_ID || TxnStatus ==
ERR_TYPE_DELIVERY_POST); }
		} TXN_RECORD_TPCC,
*PTXN_RECORD_TPCC;

		// TPC-C Deferred Delivery Txn
Record Layout:
		//
	//Incorporating delivery transaction
information into the above
		//structure would increase the size
of TXN_DETAILS from 8 to 42 bytes.
	//Hence, we store delivery transaction details
in a separate structure.
	//
		typedef struct
_TXN_RECORD_TPCC_DELIV_DEF
		{
			// common header;
must exactly match TXN_RECORD_HEADER
			JULIAN_TIME
		TxnStartT0;		// start
of txn
			BYTE
		TxnType;
		// =
TXN_REC_TYPE_TPCC_DELIV_DEF
			BYTE
		TxnSubType;
		// = 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

			bool
IsSuccessRecord() { return (TxnStatus ==
ERR_SUCCESS || TxnStatus ==
ERR_BAD_ITEM_ID || TxnStatus ==
ERR_TYPE_DELIVERY_POST); }
		} TXN_RECORD_TPCC_DELIV_DEF,
*PTXN_RECORD_TPCC_DELIV_DEF;

		//TPC-W records.
		//
		typedef struct
_TXN_RECORD_TPCW
		{
			// common header;
must exactly match TXN_RECORD_HEADER
			JULIAN_TIME
		TxnStartT0;		// start
of txn
			BYTE
		TxnType;
		// = TXN_REC_TYPE_TPCW
			BYTE
		TxnSubType;
		// depends on TxnType
			// end of common
header

			int	ThinkTime;
			// think time (ms)
			int	WIRT;
			// response time (ms)
			int
		TxnError;		// error
code providing more detail for TxnStatus
			BYTE
		TxnStatus;		//
completion status for txn to indicate errors
			//This field below
depends on the txn sub type:
			//- for Home
interaction:   it indicates whether the user was a
new customer (or returning)
			//- for Buy Confirm:
			it indicates whether
the shipping address was updated

			//- for Search
Request:		it indicates the search
type (Author, Title, or Subject)
			//This statistics needs
to be reported according to 5.5.5.1 clause in the
specs.
			//Because this field
occupies 1 byte, the record structure is already
aligned on word boundary.
			union		{
				BYTE
		newCustomer;
				BYTE
		addrUpdated;
				BYTE
		searchType;
			}
		intrDetails;

			//This field is mostly
for informational/debugging purposes.
			//It indicates what
user performed this web interaction and what
instance (session) of that use it was.
			//The first 22 bits
indicate the user #, and the top 10 bits indicate
instance (session) #.
			unsigned __int32
		uiUser;

			bool
IsSuccessRecord() { return (TxnStatus ==
ERR_SUCCESS); }
		} TXN_RECORD_TPCW,
*PTXN_RECORD_TPCW;
```

```
		//
		//		Data part of a control
record written when a user is created (or it's new
session) - to record USMD
		typedef struct
_TXN_RECORD_TPCW_USER_DATA
		{
			unsigned __int32
		uiUser;
			// user number
			JULIAN_TIME
				USMD;

		// USMD for this user
			BYTE

		bRetCust;
		// returning customer?
		}
TXN_RECORD_TPCW_USER_DATA,
*PTXN_RECORD_TPCW_USER_DATA;

		//The entire TPCW User control
record structure
		typedef struct
_TXN_RECORD_TPCW_USER
		{
			// common header;
must exactly match TXN_RECORD_HEADER
			JULIAN_TIME
		TxnStartT0;		// start
of txn
			BYTE
		TxnType;
		// = TXN_REC_TYPE_CONTROL
			BYTE
		TxnSubType;
		// depends on TxnType
			// end of common
header

			DWORD	Len;

		// number of bytes after this field
			//The fields above
must exactly match TXN_RECORD_CONTROL

			//The fields below
must exactly match
TXN_RECORD_TPCW_USER_DATA
			unsigned __int32
		uiUser;
			// user number
			JULIAN_TIME
				USMD;

		// USMD for this user
			BYTE

		bRetCust;
		// returning customer?
		} TXN_RECORD_TPCW_USER,
*PTXN_RECORD_TPCW_USER;


#define		USER_INDEX_NBITS
		22
#define		USER_INDEX_MASK
			0x003fffff
		//lower 22 bits mask for user field
in TPCW record
#define		USER_SESSION_MASK
		0xffc00000		//upper
10 bits mask for user field in TPCW record

#define		USER_CREATE_REC
			254
		//subtype for the control record
written when a user is created
#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 of 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


			// driver engine that
created this log file
			char

		szDriverEngineName[DRIVER_NAM
E_LEN];
			// 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	WRITE_BUFFER_SIZE
		 128*1024

#define	NUM_READ_BUFFERS
		1
#define	NUM_WRITE_BUFFERS
		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 sorted 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
                    // To write a
checkpoint information into the header, need to
know the EndTxnTS for the
                    // last record written
to the disk. It is not necessarily the last record in
the
                    // last written buffer,
as the last record may be only partially in the
buffer.
                    // So remember the
timestamps for 2 last records that begin in the
buffer - one of
                    // them will the last
complete record written to disk.
                    JULIAN_TIME
                    PrevEndTxnTS;
                    // timestamp of the
previous to last record     union {


        TXN_LOG_HEADER
        HeaderForCheckpoint;// header
written on every checkpoint
                                char

        szHeaderBuffer[512];    // 512
bytes is the minimum we can write to the disk

                    } HeaderBuffer;
                //need the union because can't
write sizeof(TXN_LOG_HEADER) - too few bytes

                    // Control record
returned from GetNextRecord if the file
                    // currently opened
for read was not properly shut down
                    struct
                    {

        TXN_RECORD_CONTROL
        RecHeader;
                                char

        szDriverName[DRIVER_NAME_LEN]
;
                    }
IncorrectShutDownRec;

                    BYTE
        *pCurrent;
                    //ptr to current buffer
                    BYTE
        *pBuffer[MAX_NUM_BUFFERS];


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

                    DWORD
        dwError;
                    DWORD
        dwCheckpointError;
        //error in checkpoint thread
                    HANDLE
        hTxnFile;
                    //handle to log file
                    HANDLE
        hMapFile;
                    //map file used when
sorting the log
                    HANDLE
        hIoComplete;
        //event to signify that there are no
pending IOs
                    HANDLE
        hLogFileIo;
                    //event to signal the
IO thread to write the inactive buffer
                    HANDLE
        hStopCheckpointThread;  //event
to signal the checkpoint thread to exit

                    Spinlock    Spin;

                    //spin lock to protect
the txn log file buffers
                    Spinlock
        WriteSpin;
                    //spin lock to protect
the WriteFile operation between IO and
Checkpoint threads
                    FILE

        *tmpFile;           //temp
file for merging sorted pieces
                    PBLOCK_HEADER
                    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 block
                    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()

                    BOOL
        bIncorrectShutDown;
                    // indicates whether
the log opened for read was not correctly shut
down

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

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

                    static void
CheckpointThread(CTxnLog *);        //
checkpointing thread

        public:

                    CTxnLog(LPCTSTR
szFileName, DWORD dwOpts, char *szDriver =
NULL);
                    ~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
WriteToLog(PTXN_RECORD_TPCW pTxnRcrd);
        //support for TPC-W

                int
WriteCtrlRecToLog(BYTE SubType, LPTSTR lpStr,
DWORD dwLen);

                void
CloseTransactionLogFile(void);


        PTXN_RECORD_HEADER
GetNextRecord(BOOL bSkipCtrlRecs = FALSE);

        PTXN_RECORD_HEADER
GetNextRecord(JULIAN_TIME SeekTimeT0, BOOL
bSkipCtrlRecs = FALSE);

                int Sort(void);

        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 iRecCount; };

};

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 *ErrorTypeStr() {
return "TXN LOG"; }
                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\src\tpcc_dlib.cpp

```
/*      FILE:
        TPCC_DBLIB.CPP
 *
        Microsoft TPC-C Kit Ver. 4.42.000
 *
        Copyright Microsoft, 2002
 *     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:
 *                  4.42.000 - changed
w_id fields from short to long to support >32K
warehouses
 *                  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[] = "4.20.000";

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 *msgtext)
 *
 * 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 necessary.
 *
 */

// typedef INT (SQLAPI
*DBMSGHANDLE_PROC)(PDBPROCESS, DBINT,
INT, INT, LPCSTR, LPCSTR, LPCSTR,
DBUSMALLINT);

int msg_handler(DBPROCESS *dbproc, DBINT
msgno, int msgstate, int severity,

        LPCSTR msgtext, LPCSTR srvname,
LPCSTR procname, DBUSMALLINT line)
{
        CTPCC_DBLIB
                *pConn;

        assert(dbproc != NULL);
        pConn =
(CTPCC_DBLIB*)dbgetuserdata(dbproc);
        if (pConn != NULL)
        {
                pConn->SetSqlError(
msgno, msgstate, severity, msgtext );
        }

        return 0;
}

/* FUNCTION: void UtilStrCpy(char * pDest, char
* pSrc, int n)
 *
 * PURPOSE: This function copies n characters
from string pSrc to pDst and places a
 *                                      null
character at the end of the destination string.
 *
 * ARGUMENTS:       char
                *pDest
        destination string pointer
 *
        char
        *pSrc       source string pointer
 *
        int
                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 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
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 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
{
        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::eDbSetMa
xProcs);
		}

		// 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::eDbProcH
andler);

		if (dbprocmsghandle(login,
msg_handler) == NULL)

		ThrowError(CDBLIBERR::eDbProcH
andler);


		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 (dbsetlogintime(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 success
		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::eDbSqlExe
c);

		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::eDbRpcEx
ec);

		if (dbresults(m_dbproc) !=
SUCCEED)

		ThrowError(CDBLIBERR::eDbResult
s);

		if (dbnextrow(m_dbproc) !=
REG_ROW)

		ThrowError(CDBLIBERR::eDbNextR
ow);

		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 resources
		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
oserrstr)
		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 != NULL)
		{
			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::eDbNextR
ow);
                                        else

                break;
                        }
                        iRowsRead++;
                }

                if ((iExpectedCount >= 0) &&
                        (iExpectedCount !=
iRowsRead))

                ThrowError(CDBLIBERR::eWrongRo
wCount);
}

// Read and discard results until no more.  Throw
an exception if number of result sets read doesn't
// match number expected.  The result set count
will be ignored if the expected count value
// passed in is negative.  A typical use of this
routine is to verify that there are no more
// result sets to be read.
void CTPCC_DBLIB::DiscardNextResults(int
iExpectedCount)
{
                int
                iResultsRead = 0;
                RETCODE     rc;

                while (TRUE)
                {
                        rc =
dbresults(m_dbproc);
                        if (rc ==
NO_MORE_RESULTS)
                                        break;
                        if (rc == FAIL)
                        {
                                        if
(iExpectedCount >= 0)

                ThrowError(CDBLIBERR::eDbResult
s);
                                        else

                break;
                        }

                        DiscardNextRows(-1);
                        iResultsRead++;
                }

                if ((iExpectedCount >= 0) &&
                        (iExpectedCount !=
iResultsRead))

                ThrowError(CDBLIBERR::eWrongRo
wCount);
}

void CTPCC_DBLIB::StockLevel()
{
                int
                iTryCount = 0;
                const BYTE   *pData;

                ResetError();

                while (TRUE)
                {
                        try
                        {

                dbrpcinit(m_dbproc,
"tpcc_stocklevel", 0);


                dbrpcparam(m_dbproc, NULL, 0,
SQLINT4, -1, -1, (BYTE *)
&m_txn.StockLevel.w_id);                //
@w_id int

                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::eDbRpcEx
ec);

                                        if
(dbresults(m_dbproc) != SUCCEED)

                ThrowError(CDBLIBERR::eDbResult
s);
                                        if
(dbnextrow(m_dbproc) != REG_ROW)

                ThrowError(CDBLIBERR::eDbNextR
ow);

                                        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_RE
TRIED_TRANS, iTryCount);
}


void CTPCC_DBLIB::NewOrder()
{
                int
                i;
                DBINT
                commit_flag;
                DBDATETIMEdatetime;
                DBDATEREC  daterec;

                int
                iTryCount = 0;
                const BYTE   *pData;

                ResetError();
```

```
        while (TRUE)
        {
                try
                {

        dbrpcinit(m_dbproc,
"tpcc_neworder", 0);


        dbrpcparam(m_dbproc, NULL, 0,
SQLINT4, -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,
SQLINT4, -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::eDbRpcEx
ec);


                                // 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::eDbResult
s);



        if (dbnumcols(m_dbproc) != 5)


        ThrowError(CDBLIBERR::eWrongNu
mCols);



        if (dbnextrow(m_dbproc) !=
REG_ROW)


        ThrowError(CDBLIBERR::eDbNextR
ow);



        if(pData=dbdata(m_dbproc, 1))


        UtilStrCpy(m_txn.NewOrder.OL[i].ol
_i_name, pData, 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,
dbdatlen(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_tax, o_id, c_last,
c_discount, c_credit, o_entry_d, commit_flag
                                if
(dbresults(m_dbproc) != SUCCEED)

        ThrowError(CDBLIBERR::eDbResult
s);

                                if
(dbnextrow(m_dbproc) != REG_ROW)

        ThrowError(CDBLIBERR::eDbNextR
ow);

                                if
(dbnumcols(m_dbproc) != 8)

        ThrowError(CDBLIBERR::eWrongNu
mCols);

                                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.NewOrder.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_txn.NewOrder.c_credi
t, 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_entry_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
(pData=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_RE
TRIED_TRANS, iTryCount);
}


void CTPCC_DBLIB::Payment()
{
		DBDATETIMEdatetime;
		DBDATEREC  daterec;

		int
		iTryCount = 0;
		const BYTE   *pData;

		ResetError();

		while (TRUE)
		{
				try
				{

		dbrpcinit(m_dbproc,
"tpcc_payment", 0);


		dbrpcparam(m_dbproc, NULL, 0,
SQLINT4, -1, -1, (BYTE *)
&m_txn.Payment.w_id);

		dbrpcparam(m_dbproc, NULL, 0,
SQLINT4, -1, -1, (BYTE *)
&m_txn.Payment.c_w_id);

		dbrpcparam(m_dbproc, NULL, 0,
SQLFLT8, -1, -1, (BYTE *)
&m_txn.Payment.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);

		dbrpcparam(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::eDbRpcEx
ec);

					if
(dbresults(m_dbproc) != SUCCEED)

		ThrowError(CDBLIBERR::eDbResult
s);

					if
(dbnextrow(m_dbproc) != REG_ROW)

		ThrowError(CDBLIBERR::eDbNextR
ow);

					if
(dbnumcols(m_dbproc) != 27)

		ThrowError(CDBLIBERR::eWrongNu
mCols);

					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, dbdatlen(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_dbproc, 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, pData, 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=dbdata(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_dbproc, 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_RE
TRIED_TRANS, iTryCount);
}


void CTPCC_DBLIB::OrderStatus()
{
        int
        i;
        DBDATETIMEdatetime;
        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,
SQLINT4, -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.OrderStatus.c_last);


                                if
(dbrpcexec(m_dbproc) == FAIL)

        ThrowError(CDBLIBERR::eDbRpcEx
ec);

                                // 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::eDbResult
s);
                                }

                                if
(dbnumcols(m_dbproc) != 5)

        ThrowError(CDBLIBERR::eWrongNu
mCols);

                                i = 0;
                                while
(TRUE)
                                {

        rc = dbnextrow(m_dbproc);

        if (rc == NO_MORE_ROWS)

                break;

        if (rc != REG_ROW)


        ThrowError(CDBLIBERR::eDbNextR
ow);


        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_quantit
y = (*(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::eDbResult
s);

                                if
(dbnextrow(m_dbproc) != REG_ROW)

        ThrowError(CDBLIBERR::eDbNextR
ow);
                                if
(dbnumcols(m_dbproc) != 8)

        ThrowError(CDBLIBERR::eWrongNu
mCols);


        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_firs
t, pData, dbdatlen(m_dbproc,3));

        if(pData=dbdata(m_dbproc, 4))

        UtilStrCpy(m_txn.OrderStatus.c_mi
ddle, 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.mont
h  = 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.minut
e = daterec.minute;

        m_txn.OrderStatus.o_entry_d.secon
d = 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_cod
e = 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_RE
TRIED_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,
SQLINT4, -1, -1, (BYTE *)
&m_txn.Delivery.w_id);

		dbrpcparam(m_dbproc, NULL, 0,
SQLINT1, -1, -1, (BYTE *)
&m_txn.Delivery.o_carrier_id);

					if
(dbrpcexec(m_dbproc) == FAIL)

		ThrowError(CDBLIBERR::eDbRpcEx
ec);


					if
(dbresults(m_dbproc) != SUCCEED)

		ThrowError(CDBLIBERR::eDbResult
s);

					if
(dbnextrow(m_dbproc) != REG_ROW)

		ThrowError(CDBLIBERR::eDbNextR
ow);

					if
(dbnumcols(m_dbproc) != 10)

		ThrowError(CDBLIBERR::eWrongNu
mCols);

					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_RE
TRIED_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 tpcc_dblib.h

```
/*		FILE:
		TPCC_DBLIB.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

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

// 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 CSQLERR : public CBaseErr
{
	public:

		CSQLERR(void)
		{

	m_msgno = 0;

	m_msgstate = 0;

	m_severity = 0;

	m_msgtext = NULL;
		};

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

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

		int
	ErrorType() {return
ERR_TYPE_SQL;};
		char*
	ErrorTypeStr() { return "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;};
		char*
	ErrorTypeStr() { return "DBLIB"; }
		int
	ErrorNum() {return m_dberror;};
		char*
	ErrorText() {return m_dberrstr;};
		int
	ErrorAction() { return
(int)m_eAction; }

};

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 before
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;};
		char*
	ErrorTypeStr() { return "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
severity, 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 szHost, LPCSTR
szDatabase );

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

db_odbc.dll tpcc_odbc.dll

```
/*          FILE:
            TPCC_ODBC.CPP
 *
            Microsoft TPC-C Kit Ver. 4.42.000
 *
            Copyright Microsoft, 2002
 *          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:
 *                      4.42.000 - changed
w_id fields from short to long to support >32K
warehouses
 *                      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>

//#define COMPILE_FOR_SNAC          // define
that to compile for SQL Native Client; comment
out to use MDAC

#ifndef COMPILE_FOR_SNAC
#include <odbcss.h>
#else
// Compile for SNAC
#include <sqlncli.h>
#endif

#ifdef ICECAP
#include <icapexp.h>
#endif

// need to declare functions for export
#define DllDecl  __declspec( dllexport )

#include "..\..\common\src\error.h"
#include "..\..\common\src\transbase.h"
#include "tpcc_odbc.h"

// version string; must match return value from
tpcc_version stored proc
const char    sVersion[] = "4.20.000";

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_reason_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 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_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
        LPCWSTR szSPPrefix,     // prefix
to append to the stored procedure names
        BOOL bCallNoDuplicatesNewOrder )
// whether to check for non-duplicate items in
NewOrder and call a new SP
{
        return new CTPCC_ODBC( szServer,
szUser, szPassword, szHost, szDatabase,
szSPPrefix, bCallNoDuplicatesNewOrder );
}


CTPCC_ODBC::CTPCC_ODBC (
        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
        LPCWSTR szSPPrefix,
                                // prefix
to append to the stored procedure names
        BOOL
        bCallNoDuplicatesNewOrder //
whether to check for non-duplicate items in
NewOrder and call a new SP
        )
:
m_bCallNoDuplicatesNewOrder(bCallNoDuplicates
NewOrder)
{
        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;

        wcsncpy(m_szSPPrefix, szSPPrefix,
sizeof(m_szSPPrefix)/sizeof(m_szSPPrefix[0]));


        if (
SQLAllocHandle(SQL_HANDLE_DBC, henv,
&m_hdbc) != SQL_SUCCESS )

        ThrowError(CODBCERR::eAllocHand
le);

        if ( SQLSetConnectOption(m_hdbc,
SQL_PACKET_SIZE, 4096) != SQL_SUCCESS )

        ThrowError(CODBCERR::eConnOpti
on);

        {
                char
                szConnectStr[256];
                char
                szOutStr[1024];
                SQLSMALLINT
                iOutStrLen;

#ifndef COMPILE_FOR_SNAC
                sprintf( szConnectStr,
"DRIVER=SQL
Server;SERVER=%s;UID=%s;PWD=%s;DATABA
SE=%s",

        szServer, szUser, szPassword,
szDatabase );
#else
                // Compile for SNAC
                sprintf( szConnectStr,
"DRIVER=SQL Native
Client;SERVER=%s;UID=%s;PWD=%s;DATABAS
E=%s",
        szServer, szUser, szPassword,
szDatabase );
#endif
                rc =
SQLDriverConnect(m_hdbc, NULL,
(SQLCHAR*)szConnectStr, sizeof(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::eAllocHand
le);

        {
                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::eExecDirec
t);

                // 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::eExecDirec
t);
                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_STM
T, m_hstmt);
        }

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

CTPCC_ODBC::~CTPCC_ODBC( void )
{
        // note: descriptors are
automatically released when the connection is
dropped
        SQLFreeHandle(SQL_HANDLE_STM
T, m_hstmtNewOrder);
        SQLFreeHandle(SQL_HANDLE_STM
T, m_hstmtPayment);
        SQLFreeHandle(SQL_HANDLE_STM
T, m_hstmtDelivery);
        SQLFreeHandle(SQL_HANDLE_STM
T, m_hstmtOrderStatus);
        SQLFreeHandle(SQL_HANDLE_STM
T, 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_LENGT
H];
        char
        szTmp[6*SQL_MAX_MESSAGE_LEN
GTH];
        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_odbcerrstr;
                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::InitStockLevelParams()
{
        if (
SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc,
&m_hstmtStockLevel) != SQL_SUCCESS )

        ThrowError(CODBCERR::eAllocHand
le);

        m_hstmt = m_hstmtStockLevel;

        int i = 0;

        if (   SQLBindParameter(m_hstmt,
++i, SQL_PARAM_INPUT, SQL_C_SLONG,
SQL_INTEGER, 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::eBindPara
m);

        if ( SQLBindCol(m_hstmt, 1,
SQL_C_SLONG, &m_txn.StockLevel.low_stock, 0,
NULL) != SQL_SUCCESS )

        ThrowError(CODBCERR::eBindCol);

        //Compose Stock Level statement

        _snwprintf(m_szStockLevelComman
d,
sizeof(m_szStockLevelCommand)/sizeof(m_szSto
ckLevelCommand[0]),
                L"{call
%stpcc_stocklevel (?,?,?)}", m_szSPPrefix);

}

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

        m_hstmt = m_hstmtStockLevel;

        while (TRUE)
        {
                try
                {
                        rc =
SQLExecDirectW(m_hstmt,
m_szStockLevelCommand, SQL_NTS);
                        if (rc !=
SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)

        ThrowError(CODBCERR::eExecDirec
t);

                        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::ERR_RETRIED_TRANS, iTryCount);
}

void CTPCC_ODBC::InitNewOrderParams()
{
        if ( SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc, &m_hstmtNewOrder) != SQL_SUCCESS
            || SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc, &m_hstmtNewOrderNoDuplicates) != SQL_SUCCESS
            || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc, &m_descNewOrderCols1) != SQL_SUCCESS
            || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc, &m_descNewOrderCols2) != SQL_SUCCESS
            || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc, &m_descNewOrderNoDuplicatesCols1) != SQL_SUCCESS
            || SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc, &m_descNewOrderNoDuplicatesCols2) != 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_SLONG, SQL_INTEGER, 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_SLONG, SQL_INTEGER, 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, SQL_C_CHAR, &m_txn.NewOrder.OL[0].ol_i_name, sizeof(m_txn.NewOrder.OL[0].ol_i_name), NULL) != SQL_SUCCESS
            || SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT, &m_txn.NewOrder.OL[0].ol_stock, 0, NULL) != SQL_SUCCESS
            || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR, &m_txn.NewOrder.OL[0].ol_brand_generic, sizeof(m_txn.NewOrder.OL[0].ol_brand_generic), NULL) != SQL_SUCCESS
            || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE, &m_txn.NewOrder.OL[0].ol_i_price, 0, NULL) != SQL_SUCCESS
            || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE, &m_txn.NewOrder.OL[0].ol_amount, 0, NULL) != SQL_SUCCESS
            )
        ThrowError(CODBCERR::eBindCol);

        // associate the column bindings for the second result set
        if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC, m_descNewOrderCols2, SQL_IS_POINTER ) != SQL_SUCCESS )
        ThrowError(CODBCERR::eSetStmtAttr);

        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);

        //Compose the New Order statement
        _snwprintf(m_szNewOrderCommand, sizeof(m_szNewOrderCommand)/sizeof(m_szNewOrderCommand[0]),
                        // 0         1         2
                        // 012345678901234567890123456789
                            L"{call %stpcc_neworder(?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,"
                            L"?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?)}", m_szSPPrefix);

        m_iBeginNewOrderVariablePart = 29 + wcslen(m_szSPPrefix);          // fixed part + prefix part

        ///////////////////////////////////////////////////////////////////////////////////
```

```
		//
		//		Now initialize New Order that works on no duplicate (w_id,i_id) pairs

		//		and returns one result set for lineitem details.
		//
		//
		m_hstmt = m_hstmtNewOrderNoDuplicates;

		if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC, m_descNewOrderNoDuplicatesCols1, SQL_IS_POINTER ) != SQL_SUCCESS )

		ThrowError(CODBCERR::eSetStmtAttr);

		i = 0;
		if (	SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT, SQL_C_SLONG, SQL_INTEGER, 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_SLONG, SQL_INTEGER, 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 row-wise binding
		if (	SQLSetStmtAttrW(m_hstmt, SQL_ATTR_ROW_BIND_TYPE, (SQLPOINTER)sizeof(m_txn.NewOrder.OL[0]), SQL_IS_UINTEGER) != SQL_SUCCESS

				||
SQLSetStmtAttrW(m_hstmt, SQL_ATTR_ROWS_FETCHED_PTR, &m_RowsFetched, 0) != SQL_SUCCESS )


		ThrowError(CODBCERR::eSetStmtAttr);

		i = 0;
		if (	SQLBindCol(m_hstmt, ++i, SQL_C_CHAR, &m_txn.NewOrder.OL[0].ol_i_name, sizeof(m_txn.NewOrder.OL[0].ol_i_name), NULL) != SQL_SUCCESS
				||
SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT, &m_txn.NewOrder.OL[0].ol_stock, 0, NULL) != SQL_SUCCESS
				||
SQLBindCol(m_hstmt, ++i, SQL_C_CHAR, &m_txn.NewOrder.OL[0].ol_brand_generic, sizeof(m_txn.NewOrder.OL[0].ol_brand_generic), NULL) != SQL_SUCCESS
				||
SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE, &m_txn.NewOrder.OL[0].ol_i_price, 0, NULL) != SQL_SUCCESS
				||
SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE, &m_txn.NewOrder.OL[0].ol_amount, 0, NULL) != SQL_SUCCESS
				)

		ThrowError(CODBCERR::eBindCol);

		// associate the column bindings for the second result set
		if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC, m_descNewOrderNoDuplicatesCols2, SQL_IS_POINTER ) != SQL_SUCCESS )

		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);

		//Compose the New Order statement
		_snwprintf(m_szNewOrderNoDuplicatesCommand, sizeof(m_szNewOrderNoDuplicatesCommand)/sizeof(m_szNewOrderNoDuplicatesCommand[0]),
					L"{call %stpcc_neworder_new(?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,"

		L"?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?)}", m_szSPPrefix);

		m_iBeginNewOrderNoDuplicatesVariablePart = 33 + wcslen(m_szSPPrefix);  // fixed part + prefix part
}

//
//		Returns true if there are duplicate (warehouse_id, item_id)
//		lineitem pairs in New Order input parameters.
//
bool CTPCC_ODBC::DuplicatesInNewOrder()
{
		int i, j;

		for (i = 0; i < m_txn.NewOrder.o_ol_cnt; ++i)
		{
			for (j = i+1; j< m_txn.NewOrder.o_ol_cnt; ++j)
			{
				if (m_txn.NewOrder.OL[i].ol_i_id == m_txn.NewOrder.OL[j].ol_i_id)
				{

		return true;
				}
			}
		}

		return false;
}

void CTPCC_ODBC::NewOrder()
{
		if (m_bCallNoDuplicatesNewOrder)
		{
			if (DuplicatesInNewOrder())
```

```
                {
        NewOrderDuplicates();
                }
                else
                {

        NewOrderNoDuplicates();

                }
        }
        else
        {

        NewOrderDuplicates();
        }
}

void CTPCC_ODBC::NewOrderDuplicates()
{
        int
                        i;
        RETCODE
                rc;
        int

        iTryCount = 0;



         // 0        1        2



         //
0123456789012345678901234567890123456789
        wchar_t

        szSqlTemplate[iMAX_SP_NAME_LEN
];


                        //=
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::eSetStmtAt
tr);

        // clip statement buffer based on
number of parameters
        // fixed part is 29 chars and
variable part is 6 chars per line item
        wcscpy(szSqlTemplate,
m_szNewOrderCommand[i]);
        i += m_BeginNewOrderVariablePart
+ m_txn.NewOrder.o_ol_cnt*6;
        wcscpy( &szSqlTemplate[i], L")}" );

        // check whether any order lines
are for a remote warehouse
        m_txn.NewOrder.o_all_local = 1;
        for (i = 0; i <
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, szSqlTemplate,
SQL_NTS);
                        if (rc !=
SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)

        ThrowError(CODBCERR::eExecDirec
t);

                        // 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 the next resultset

        if ( SQLMoreResults(m_hstmt) ==
SQL_ERROR )


        ThrowError(CODBCERR::eMoreResu
lts);


        m_txn.NewOrder.total_amount +=
m_txn.NewOrder.OL[i].ol_amount;
                        }
                        //
associate the column bindings for the second
result set
                        if (
SQLSetStmtAttrW( m_hstmt,
SQL_ATTR_APP_ROW_DESC,
m_descNewOrderCols2, SQL_IS_POINTER ) !=
SQL_SUCCESS )

        ThrowError(CODBCERR::eSetStmtAt
tr);



                        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
= eInvalidItem;

                        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_RE
TRIED_TRANS, iTryCount);
}

//
//      No lineitem duplicates optimized
version.
//
void CTPCC_ODBC::NewOrderNoDuplicates()
{
        int
                        i;
        RETCODE
                rc;
```

```
	int

	iTryCount = 0;



	// 0	1	2	3



	//
01234567890123456789012345678901234567890123
	wchar_t

	szSqlTemplate[iMAX_SP_NAME_LEN
];



					//=
L"{call tpcc_neworder_new(?,?,?,?,?,?,"


					//
L"?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,"


					//
L"?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,"


					//
L"?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?,?)}";

	m_hstmt =
m_hstmtNewOrderNoDuplicates;

	// associate the parameter and
column bindings for this transaction
	if ( SQLSetStmtAttrW( m_hstmt,
SQL_ATTR_APP_ROW_DESC,
m_descNewOrderNoDuplicatesCols1,
SQL_IS_POINTER ) != SQL_SUCCESS )

	ThrowError(CODBCERR::eSetStmtAt
tr);

	// clip statement buffer based on
number of parameters
	// fixed part is 33 chars and
variable part is 6 chars per line item
	wcscpy(szSqlTemplate,
m_szNewOrderNoDuplicatesCommand);
	i =
m_iBeginNewOrderNoDuplicatesVariablePart +
m_txn.NewOrder.o_ol_cnt*6;
	wcscpy( &szSqlTemplate[i], L")}" );

	// check whether any order lines
are for a remote warehouse
	m_txn.NewOrder.o_all_local = 1;
	for (i = 0; i <
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
		{
				//
configure block cursor
				if (
SQLSetStmtAttrW(m_hstmt,
SQL_ATTR_ROW_ARRAY_SIZE, (SQLPOINTER)1,
0) != SQL_SUCCESS )

	ThrowError(CODBCERR::eSetStmtAt
tr);


				rc =
SQLExecDirectW(m_hstmt, szSqlTemplate,
SQL_NTS);
				if (rc !=
SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)

	ThrowError(CODBCERR::eExecDirec
t);

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

	ThrowError(CODBCERR::eSetStmtAt
tr);

				// Get
order line results

				if (
SQLFetch(m_hstmt) == SQL_ERROR)

	ThrowError(CODBCERR::eFetch);



	m_txn.NewOrder.total_amount = 0;
				for (i =
0; i<m_txn.NewOrder.o_ol_cnt; i++)
				{



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

				//
associate the column bindings for the second
result set
				if (
SQLSetStmtAttrW( m_hstmt,
SQL_ATTR_APP_ROW_DESC,
m_descNewOrderNoDuplicatesCols2,
SQL_IS_POINTER ) != SQL_SUCCESS )

	ThrowError(CODBCERR::eSetStmtAt
tr);

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

	ThrowError(CODBCERR::eMoreResu
lts);
				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
= eInvalidItem;

				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_RE
TRIED_TRANS, iTryCount);
}

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

	ThrowError(CODBCERR::eAllocHand
le);

	m_hstmt = m_hstmtPayment;

	int i = 0;
	if (   SQLBindParameter(m_hstmt,
++i, SQL_PARAM_INPUT, SQL_C_SLONG,
SQL_INTEGER, 0, 0, &m_txn.Payment.w_id, 0,
NULL) != SQL_SUCCESS
```

```
                        ||
SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SLONG,
SQL_INTEGER, 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(CODBCERR::eBindPara
m);

        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_CHAR,
&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.Payment.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.Payment.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_credit),
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);

        //Compose Payment statement

        _snwprintf(m_szPaymentCommand,
sizeof(m_szPaymentCommand)/sizeof(m_szPaym
entCommand[0]),
                        L"{call
%stpcc_payment (?,?,?,?,?,?,?,?)}", m_szSPPrefix);

}

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,
m_szPaymentCommand, SQL_NTS);
                                if (rc !=
SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)

        ThrowError(CODBCERR::eExecDirec
t);

                                if (
SQLFetch(m_hstmt) == SQL_ERROR)

        ThrowError(CODBCERR::eFetch);
```

```
		SQLFreeStmt(m_hstmt,
SQL_CLOSE);

                                if
(m_txn.Payment.c_id == 0)

		throw new CTPCC_ODBC_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_RE
TRIED_TRANS, iTryCount);
}

void CTPCC_ODBC::InitOrderStatusParams()
{
		if (
SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc,
&m_hstmtOrderStatus) != SQL_SUCCESS
                        ||
SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
&m_descOrderStatusCols1) != SQL_SUCCESS
                        ||
SQLAllocHandle(SQL_HANDLE_DESC, m_hdbc,
&m_descOrderStatusCols2) != SQL_SUCCESS
                        )

		ThrowError(CODBCERR::eAllocHand
le);

		m_hstmt = m_hstmtOrderStatus;

		if (   SQLSetStmtAttrW( m_hstmt,
SQL_ATTR_APP_ROW_DESC,
m_descOrderStatusCols1, SQL_IS_POINTER ) !=
SQL_SUCCESS )

		ThrowError(CODBCERR::eSetStmtAt
tr);

		int i = 0;
		if (   SQLBindParameter(m_hstmt,
++i, SQL_PARAM_INPUT, SQL_C_SLONG,
SQL_INTEGER, 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::eBindPara
m);

		// 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_FETCHED_PTR,
&m_RowsFetched, 0) != SQL_SUCCESS

                        )

		ThrowError(CODBCERR::eSetStmtAt
tr);

		i = 0;
		if (   SQLBindCol(m_hstmt, ++i,
SQL_C_SLONG,
&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_SUCCESS
                        ||
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::eSetStmtAt
tr);

		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_middle), 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_hstmt, ++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);

		//Compose Order Status statement
		_snwprintf(m_szOrderStatusComma
nd,
sizeof(m_szOrderStatusCommand)/sizeof(m_szOr
derStatusCommand[0]),
                        L"{call
%stpcc_orderstatus (?,?,?,?)}", m_szSPPrefix);
}

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::eSetStmtAt
tr);

		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::eSetStmtAt
tr);

                                        rc =
SQLExecDirectW(m_hstmt,
m_szOrderStatusCommand, SQL_NTS);
                                        if ( ((rc
== SQL_SUCCESS_WITH_INFO) &&
(m_RowsFetched != 0)) || (rc == SQL_ERROR) )

                ThrowError(CODBCERR::eExecDirec
t);

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

                ThrowError(CODBCERR::eSetStmtAt
tr);

                                        rc =
SQLFetchScroll( m_hstmt, SQL_FETCH_NEXT, 0
);

                                        if ( ((rc
== SQL_SUCCESS_WITH_INFO) &&
(m_RowsFetched != 0)) || (rc == SQL_ERROR) )

                ThrowError(CODBCERR::eFetchScro
ll);


                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::eSetStmtAt
tr);


                if ( SQLMoreResults(m_hstmt) ==
SQL_ERROR )


                ThrowError(CODBCERR::eMoreResu
lts);



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


                ThrowError(CODBCERR::eFetch);
                                        }

                SQLFreeStmt(m_hstmt,
SQL_CLOSE);

                                        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_cod
e = 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_RE
TRIED_TRANS, iTryCount);
}

void CTPCC_ODBC::InitDeliveryParams()
{
                if (
SQLAllocHandle(SQL_HANDLE_STMT, m_hdbc,
&m_hstmtDelivery) != SQL_SUCCESS )

                ThrowError(CODBCERR::eAllocHand
le);

                m_hstmt = m_hstmtDelivery;

                int i = 0;
                if (   SQLBindParameter(m_hstmt,
++i, SQL_PARAM_INPUT, SQL_C_SLONG,
SQL_INTEGER, 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::eBindPara
m);

                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);
                }

                //Compose Delivery statement

                _snwprintf(m_szDeliveryCommand,
sizeof(m_szDeliveryCommand)/sizeof(m_szDelive
ryCommand[0]),
                                L"{call
%stpcc_delivery (?,?)}", m_szSPPrefix);
}

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

                m_hstmt = m_hstmtDelivery;

                while (TRUE)
                {
                                try
                                {
                                                rc =
SQLExecDirectW(m_hstmt,
m_szDeliveryCommand, SQL_NTS);
                                                if (rc !=
SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)


                ThrowError(CODBCERR::eExecDirec
t);

                                                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_RE
TRIED_TRANS, iTryCount);
}
```

db_odbc.dll 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 created
// by the DLL's .cpp module for export.
#ifndef DllDecl
#define DllDecl  __declspec( dllimport )
#endif



#define iMAX_SP_NAME_LEN 256
                //maximum length of a stored
procedure name with parameters

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 SQLBindParameter

                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;};
                                char*
                ErrorTypeStr() { return "ODBC"; }
                                int
                ErrorNum() {return
m_NativeError;};
                                char*
                ErrorText() {return m_odbcerrstr;};
                                int
                ErrorAction() { return
(int)m_eAction; }
};

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 orders 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;};
                                char*
                ErrorTypeStr() { return "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_hstmtNewOrder;
                                SQLHSTMT
                m_hstmtNewOrderNoDuplicates;
                // NewOrder with one result set for
lineitem details
```

```
                SQLHSTMT
        m_hstmtPayment;
                SQLHSTMT
        m_hstmtDelivery;
                SQLHSTMT
        m_hstmtOrderStatus;
                SQLHSTMT
        m_hstmtStockLevel;

                SQLHDESC
        m_descNewOrderCols1;
                SQLHDESC
        m_descNewOrderCols2;
                SQLHDESC
        m_descNewOrderNoDuplicatesCols1
;       // NewOrder with one result set for
lineitem details
                SQLHDESC
        m_descNewOrderNoDuplicatesCols2
;       // NewOrder with one result set for
lineitem details
                SQLHDESC
        m_descOrderStatusCols1;
                SQLHDESC
        m_descOrderStatusCols2;

                wchar_t
        m_szSPPrefix[32];       // stored
procedures prefix

                wchar_t
        m_szNewOrderCommand[iMAX_SP_
NAME_LEN];
                wchar_t
        m_szNewOrderNoDuplicatesComma
nd[iMAX_SP_NAME_LEN];
                int

        m_iBeginNewOrderVariablePart;
        // begining of the variable part in
NewOrder statement
                int

        m_iBeginNewOrderNoDuplicatesVari
ablePart;   // begining of the variable part in
NewOrder statement

                wchar_t
        m_szPaymentCommand[iMAX_SP_N
AME_LEN];
                wchar_t
        m_szDeliveryCommand[iMAX_SP_N
AME_LEN];
                wchar_t
        m_szOrderStatusCommand[iMAX_S
P_NAME_LEN];
                wchar_t
        m_szStockLevelCommand[iMAX_SP
_NAME_LEN];

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

                // tpcc_neworder_new
flag
                BOOL
        m_bCallNoDuplicatesNewOrder;

                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;

                bool
DuplicatesInNewOrder();
                void
NewOrderDuplicates();
                void
NewOrderNoDuplicates();

        public:

                CTPCC_ODBC(
        LPCSTR szServer, LPCSTR szUser,
LPCSTR szPassword,


                LPCSTR szHost,
LPCSTR szDatabase,

                LPCWSTR szSPPrefix,
BOOL bCallNoDuplicatesNewOrder);
                ~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);
        ();
                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,
                LPCWSTR szSPPrefix,
BOOL bCallNoDuplicatesNewOrder );

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

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;
                        }


                        char *ErrorTypeStr() {
return "COM"; }

                        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_DATA
        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_pTxn->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);
```

db_oledb_dll\tpcc_oledb.h

```
/*              FILE:
                TPCC_OLEDB.H
 *
                Microsoft TPC-C Kit Ver. 4.20.000
 *
                Copyright Microsoft, 1999-2004
 *
                Written by Sergey Vasilevskiy
 *           All Rights Reserved
 *
 *

 *
 *              PURPOSE:    Header file for TPC-C
txn class OLE DB implementation.

 *
 *
 */
#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

#define iMAX_SP_NAME_LEN 256
                //maximum length of a stored
procedure name with parameters

// Type of parameter and result set column
bindings.
enum eBindingType
{
                eInputParameter,
                eOutputParameter,
                eInputOutputParameter,
                eOutputColumn
};
```

```
class COLEDBERR : public CBaseErr
{
	public:
		enum ACTION
		{
			eNone,

	eUnknown,

	eQueryInterface,
		// error from
QueryInterface

	eCreateSession,

	eCreateCommand,

	eSetCommandText,

	eExecute,
	// = 6

	eCreateAccessor,

	ePrepare,

	eGetNextRows,

	eGetData,

	eGetResult
	// = 11
		};

		COLEDBERR(LPCTSTR
szLoc)
			:
CBaseErr(szLoc)
		{

	m_eAction = eNone;

	m_NativeError = 0;

	m_bDeadLock = FALSE;

	m_OLEDBErrStr = NULL;
		};



		~COLEDBERR()
		{
			if
(m_OLEDBErrStr != NULL)

	delete [] m_OLEDBErrStr;
		};

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

		int
	ErrorType() {return
ERR_TYPE_OLEDB;};
		char*
	ErrorTypeStr() { return "OLEDB"; }
		int
	ErrorNum() {return
m_NativeError;};
		char*
	ErrorText() {return
m_OLEDBErrStr;};
		int
	ErrorAction() { return
(int)m_eAction; }

};

class CTPCC_OLEDB_ERR : public CBaseErr
{
	public:
		enum
TPCC_OLEDB_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 before
transaction succeeded."
		};

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

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

		int
	m_errno;
		int
	m_iTryCount;

		int
	ErrorType() {return
ERR_TYPE_TPCC_OLEDB;};
		char*
	ErrorTypeStr() { return "TPCC
OLEDB"; }

		int
	ErrorNum() {return m_errno;};

		char*
	ErrorText();
};

class DllDecl CTPCC_OLEDB : 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
		DBPROPSET

	m_rgInitPropSet;
	// initialization property set used to
establish a connection
		DBPROP

	m_InitProperties[4];	//
individual initialization properties

		IDBCreateSession*

	m_pIDBCreateSession;	//
session (connection) interface
		IDBCreateCommand*

	m_pIDBCreateCommand;  // SQL
command creation interface

		IMalloc*

	m_pIMalloc;
		// Needed to release
error strings.

		// StockLevel
		ICommandText*

	m_pIStockLevelCommand;
		HACCESSOR

	m_hStockLevelInputAccessor;
	// accessor to bind input
parameters
		HACCESSOR

	m_hStockLevelOutputAccessor;
	// accessor to bind output columns
		DBPARAMS

	m_StockLevelExecuteParams;
		// parameter structure
for Execute

		// NewOrder
		// One prepared
command for each possible number of new order
line items
		ICommandText*

	m_pINewOrderCommand[MAX_OL_
NEW_ORDER_ITEMS];

		// accessors to bind
input parameters
		// one for each
possible number of new order line items
		HACCESSOR

	m_hNewOrderInputAccessor[MAX_
OL_NEW_ORDER_ITEMS];
		// accessor to bind
output columns of the first rowset
		HACCESSOR

	m_hNewOrderOutputAccessor[MAX
_OL_NEW_ORDER_ITEMS];
		// accessor to bind
output columns of the second rowset
```

```
                        HACCESSOR

        m_hNewOrderOutputAccessor2[MA
X_OL_NEW_ORDER_ITEMS];
                        // parameter structure
for Execute
                        DBPARAMS

        m_NewOrderExecuteParams[MAX_
OL_NEW_ORDER_ITEMS];

                        // Payment
                        ICommandText*

        m_pIPaymentCommand;
                        HACCESSOR

        m_hPaymentInputAccessor;
        // accessor to bind input
parameters
                        HACCESSOR

        m_hPaymentOutputAccessor;
        // accessor to bind output columns
                        DBPARAMS

        m_PaymentExecuteParams;
                        // parameter structure
for Execute

                        // OrderStatus

                        ICommandText*

        m_pIOrderStatusCommand;
                        HACCESSOR

        m_hOrderStatusInputAccessor;
        // accessor to bind input
parameters
                        HACCESSOR

        m_hOrderStatusOutputAccessor;
        // accessor to bind output columns
                        HACCESSOR

        m_hOrderStatusOutputAccessor2;
        // accessor to bind output columns
                        DBPARAMS

        m_OrderStatusExecuteParams;
                        // parameter structure
for Execute

                        // Delivery
                        ICommandText*

        m_pIDeliveryCommand;

                        HACCESSOR

        m_hDeliveryInputAccessor;
        // accessor to bind input
parameters
                        HACCESSOR

        m_hDeliveryOutputAccessor;
        // accessor to bind output columns
                        DBPARAMS

        m_DeliveryExecuteParams;//
parameter structure for Execute
                        wchar_t

                m_szSPPrefix[32];       // stored
procedures prefix
                        // new-order specific
fields
                        int

                        m_no_commit_flag;

                        void ThrowError(
IUnknown* pObjectWithError,
COLEDBERR::ACTION eAction, LPCTSTR
szLocation );

                        void
CheckSPVersion();

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

                        // Helper function to
create and prepare a command
                        void
CreateCommand(wchar_t* szSQLCommand,
ICommandText** ppICommandText);
                        // Helper function to
prepare a command
                        void
PrepareCommand(ICommandText* pICommand);

                        // Helper function to
fill one binding
                        // Used for both input
parameter and output column bindings
                        void
SetBinding(DBBINDING* pDBBinding, size_t
obValue, size_t cbMaxLen, DBTYPE wType);

                        // Helper function to
initialize an array of bindings
                        void
InitBindings(DBBINDING* pDBBindings, int
iCount, eBindingType BindingType);

                        union
                        {

                NEW_ORDER_DATA
                NewOrder;


                PAYMENT_DATA
                Payment;

                DELIVERY_DATA
                Delivery;

                STOCK_LEVEL_DATA
                StockLevel;

                ORDER_STATUS_DATA
                OrderStatus;
                        }
                        m_txn;
        public:
        CTPCC_OLEDB(LPCSTR szServer,
LPCSTR szUser, LPCSTR szPassword, LPCSTR
szHost, LPCSTR szDatabase, LPCWSTR
szSPPrefix);

        ~CTPCC_OLEDB(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_OLEDB*
CTPCC_OLEDB_new
        ( LPCSTR szServer, LPCSTR szUser,
LPCSTR szPassword, LPCSTR szHost, LPCSTR
szDatabase, LPCWSTR szSPPrefix );

typedef CTPCC_OLEDB*
(TYPE_CTPCC_OLEDB)(LPCSTR, LPCSTR,
LPCSTR, LPCSTR, LPCSTR, LPCWSTR);
```

db_oledb_dll\src\tpcc_oledb.cpp

```
/*      FILE:
        TPCC_OLEDB.CPP
 *
        Microsoft TPC-C Kit Ver. 4.42.000
 *
        Copyright Microsoft, 2004
 *
        Written by Sergey Vasilevskiy
 *      All Rights Reserved
 *
 *
```

```
 *
 *              PURPOSE:    Implements OLEDB
calls for TPC-C txns.
 *              Contact:    Charles Levine
(clevine@microsoft.com)
 *
 *
 */

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

#define DBINITCONSTANTS
#include <oledb.h>
//#include <sqloledb.h> // Use MDAC
#include <sqlncli.h>        // Use SNAC
#include <oledberr.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_oledb.h"

#ifndef SQL_MAX_MESSAGE_LENGTH
#define SQL_MAX_MESSAGE_LENGTH 512
#endif

// version string; must match return value from
tpcc_version stored proc
const char    sVersion[] = "4.20.000";

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

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

// this needs to be the same as the max length of
machine/database/user/password in Benchcraft
(engstut.h)
const static int            iMaxNameLen = 32;

BOOL APIENTRY DllMain(HMODULE hModule,
DWORD ul_reason_for_call, LPVOID lpReserved)
{
            switch( ul_reason_for_call )
            {
                        case
DLL_PROCESS_ATTACH:

            DisableThreadLibraryCalls(hModule)
;

                                    break;

                        case
DLL_PROCESS_DETACH:

                                    break;

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

/* FUNCTION: CTPCC_OLEDB_ERR::ErrorText
 *
 */

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

            static SERRORMSG errorMsgs[] =
            {
                        {
ERR_WRONG_SP_VERSION,
            "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
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_OLEDB*
CTPCC_OLEDB_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
            LPCWSTR szSPPrefix )
            // prefix to append to the stored
procedure names
{           return new CTPCC_OLEDB(
szServer, szUser, szPassword, szHost,
szDatabase, szSPPrefix );
}


CTPCC_OLEDB::CTPCC_OLEDB (
            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
            LPCWSTR szSPPrefix
                                    // prefix
to append to the stored procedure names
            )
            : m_pIMalloc(NULL)
{
            int
                                    iRc;
            int
                                    i;
            HRESULT
                        hr;
            IDBInitialize*
            pIDBInitialize = NULL;
            // data source interface
            IDBProperties*
            pIDBProperties = NULL;
            ICommandText*
            pICommandText;
                                    // SQL
command without parameters
            wchar_t

            szwServer[iMaxNameLen];
            // Unicode string used to convert to
BSTR
            wchar_t

            szwDatabase[iMaxNameLen];
            // Unicode string used to convert to
BSTR
            wchar_t

            szwUser[iMaxNameLen];
            // Unicode string used to convert to
BSTR
            wchar_t

            szwPassword[iMaxNameLen];
            // Unicode string used to convert to
BSTR



            // Copy stored procedures prefix
            wcsncpy(m_szSPPrefix, szSPPrefix,
sizeof(m_szSPPrefix)/sizeof(m_szSPPrefix[0]));

            // Convert single byte ANSI strings
to Unicode (for later conversion to BSTR)
```

```
		iRc =
MultiByteToWideChar(CP_THREAD_ACP,
MB_PRECOMPOSED, szServer,
(int)strlen(szServer)+1, szwServer,
iMaxNameLen);
		iRc =
MultiByteToWideChar(CP_THREAD_ACP,
MB_PRECOMPOSED, szDatabase,
(int)strlen(szDatabase)+1, szwDatabase,
iMaxNameLen);
		iRc =
MultiByteToWideChar(CP_THREAD_ACP,
MB_PRECOMPOSED, szUser,
(int)strlen(szUser)+1, szwUser, iMaxNameLen);
		iRc =
MultiByteToWideChar(CP_THREAD_ACP,
MB_PRECOMPOSED, szPassword,
(int)strlen(szPassword)+1, szwPassword,
iMaxNameLen);

		// Initialize COM library to be able
to use OLE-DB interfaces
		CoInitialize(NULL);

		// Initialization - create SQLOLEDB
component
		//hr =
CoCreateInstance(CLSID_SQLOLEDB, // GUID of
SQLOLEDB component
		// Compile for SNAC
		hr =
CoCreateInstance(CLSID_SQLNCLI,	// GUID
of SQLNCLI component
			NULL,
				// not defining an
aggregate component, so NULL
			CLSCTX_INPROC_SERVER,
		// run the component in our
process
			IID_IDBInitialize,
			(void **) &pIDBInitialize);
	/*
	Initialize the property values needed
	to establish the connection.
	*/
	for(i = 0; i < 4; i++)
	    VariantInit(&m_InitProperties[i].vValue);
	//Server name.
	m_InitProperties[0].dwPropertyID  =
DBPROP_INIT_DATASOURCE;
	m_InitProperties[0].vValue.vt     = VT_BSTR;
	m_InitProperties[0].vValue.bstrVal=
SysAllocString(szwServer);
	m_InitProperties[0].dwOptions     =
DBPROPOPTIONS_REQUIRED;
	m_InitProperties[0].colid         = DB_NULLID;
	//Database.
	m_InitProperties[1].dwPropertyID  =
DBPROP_INIT_CATALOG;
	m_InitProperties[1].vValue.vt     = VT_BSTR;
	m_InitProperties[1].vValue.bstrVal=
SysAllocString(szwDatabase);
	m_InitProperties[1].dwOptions     =
DBPROPOPTIONS_REQUIRED;
	m_InitProperties[1].colid         = DB_NULLID;

	//Username (login).
	m_InitProperties[2].dwPropertyID  =
DBPROP_AUTH_USERID;
	m_InitProperties[2].vValue.vt     = VT_BSTR;
	m_InitProperties[2].vValue.bstrVal=
SysAllocString(szwUser);
	m_InitProperties[2].dwOptions     =
DBPROPOPTIONS_REQUIRED;
	//Password.
	m_InitProperties[2].colid         = DB_NULLID;
	m_InitProperties[3].dwPropertyID  =
DBPROP_AUTH_PASSWORD;
	m_InitProperties[3].vValue.vt     = VT_BSTR;
	m_InitProperties[3].vValue.bstrVal=
SysAllocString(szwPassword);
	m_InitProperties[3].dwOptions     =
DBPROPOPTIONS_REQUIRED;
	m_InitProperties[3].colid         = DB_NULLID;
	/*
	Construct the DBPROPSET
structure(m_rgInitPropSet). The
	DBPROPSET structure is used to pass an array
of DBPROP
	structures (m_InitProperties) to the
SetProperties method.
	*/
	m_rgInitPropSet.guidPropertySet =
DBPROPSET_DBINIT;
	m_rgInitPropSet.cProperties    = 4;
	m_rgInitPropSet.rgProperties   =
m_InitProperties;
	//Set initialization properties.
		if (FAILED(hr = pIDBInitialize-
>QueryInterface(IID_IDBProperties,



(void
**)&pIDBProperties)))
		{

		ThrowError(pIDBInitialize,
COLEDBERR::eQueryInterface,
"CTPCC_OLEDB()");
		}

	hr = pIDBProperties->SetProperties(1,
&m_rgInitPropSet);

	pIDBProperties->Release();
	//Now establish the connection to the data
source.
	hr = pIDBInitialize->Initialize();

		// Free BSTR property strings
		for(i = 0; i < 4; i++)
		{

SysFreeString(m_InitProperties[i].vValue.bstrVal)
;
		}

		hr = pIDBInitialize-
>QueryInterface(IID_IDBCreateSession, (void
**)&m_pIDBCreateSession);

		// Releasing this has no effect on
the SQL Server connection
	// of the data source object because of the
reference maintained by
	// m_pIDBCreateSession.
	pIDBInitialize->Release();
	pIDBInitialize = NULL;


		hr = m_pIDBCreateSession-
>CreateSession(NULL, IID_IDBCreateCommand,
(IUnknown **)&m_pIDBCreateCommand);

		if (FAILED(hr))
		{

		ThrowError(m_pIDBCreateSession,
COLEDBERR::eCreateSession,
"CTPCC_OLEDB()");

		hr = m_pIDBCreateCommand-
>CreateCommand(NULL, IID_ICommandText,
(IUnknown **)&pICommandText);
		if (FAILED(hr))
		{

		ThrowError(m_pIDBCreateComman
d, COLEDBERR::eCreateCommand,
"CTPCC_OLEDB()");
		}

		hr = pICommandText-
>SetCommandText(DBGUID_SQL, L"set nocount
on set XACT_ABORT ON");
		if (FAILED(hr))
		{

		ThrowError(pICommandText,
COLEDBERR::eSetCommandText,
"CTPCC_OLEDB()");
		}

		hr = pICommandText-
>Execute(NULL, IID_NULL, NULL, NULL, NULL);
		if (FAILED(hr))
		{

		ThrowError(pICommandText,
COLEDBERR::eExecute, "CTPCC_OLEDB()");
		}

		pICommandText->Release();

		// verify that version of stored procs
on server is correct
		CheckSPVersion();

		// Get IMalloc interface
		hr = CoGetMalloc(1, (LPMALLOC
*)&m_pIMalloc);

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

CTPCC_OLEDB::~CTPCC_OLEDB( void )
{
		if (m_pIMalloc != NULL)
		{
			m_pIMalloc-
>Release();
		}
		m_pIPaymentCommand-
>Release();
		m_pIDBCreateCommand-
>Release();
		m_pIDBCreateSession->Release();

		CoUninitialize();		//
uninitialize COM library
}


/*
```

```
*		Check stored procedures version on
the server.
*/
void CTPCC_OLEDB::CheckSPVersion()
{
		HRESULT
		hr;
		char
		db_sp_version[10];
		ICommandText*
		pICommandText;
		IAccessor*
		pIAccessor;
		IRowset*
		pRowset;
		const ULONG
		nOutputParams = 1;	// output
1st result set columns
		HACCESSOR
		hTpccVersionOutputAccessor;
		// Structure to bind in accessor
		DBBINDING
		acOutputDBBinding[nOutputParams
];
		DBBINDSTATUS
		acOutputDBBindStatus[nOutputPara
ms];
		LONG
		cRows = 1;   // number of rows
returned in the rowset
		ULONG
		cRowsObtained;
		HROW
		rghRow;
		//returned row handles
		HROW*
		prghRow = &rghRow;


		hr = m_pIDBCreateCommand-
>CreateCommand(NULL, IID_ICommandText,
(IUnknown **)&pICommandText);
		if (FAILED(hr))
		{

		ThrowError(m_pIDBCreateComman
d, COLEDBERR::eCreateCommand,
"CheckSPVersion()");
		}

		hr = pICommandText-
>SetCommandText(DBGUID_SQL, L"{call
tpcc_version}");
		if (FAILED(hr))
		{

		ThrowError(pICommandText,
COLEDBERR::eSetCommandText,
"CheckSPVersion()");
		}

		hr = pICommandText-
>QueryInterface(IID_IAccessor, (void
**)&pIAccessor);
		if (FAILED(hr))
		{

		ThrowError(pICommandText,
COLEDBERR::eQueryInterface,
"CheckSPVersion()");
		}

		// Now fill the binding information
for result set 1 output columns
		InitBindings(&acOutputDBBinding[0
], nOutputParams, eOutputColumn);

		// Binding for a rowset
		SetBinding(&acOutputDBBinding[0],
0, sizeof(db_sp_version), DBTYPE_STR);

		hr = pIAccessor->CreateAccessor(
			DBACCESSOR_ROWDATA,
			nOutputParams,
			acOutputDBBinding,
			sizeof(db_sp_version),

&hTpccVersionOutputAccessor,
			acOutputDBBindStatus);
		if (FAILED(hr))
		{

		ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"CheckSPVersion()");
		}

		hr = pICommandText-
>Execute(NULL, IID_IRowset, NULL, NULL,
(IUnknown **)&pRowset);
		if (FAILED(hr))
		{

		ThrowError(pICommandText,
COLEDBERR::eExecute, "CheckSPVersion()");
		}

		// Fetch the result row handle(s)
		hr = pRowset-
>GetNextRows(DB_NULL_HCHAPTER, 0, cRows,
&cRowsObtained, &prghRow);
		if (FAILED(hr))
		{

		ThrowError(pICommandText,
COLEDBERR::eGetNextRows,
"CheckSPVersion()");
		}

		// Fetch the actual row data by
handle
		hr = pRowset->GetData(rghRow,
hTpccVersionOutputAccessor, &db_sp_version);
		if (FAILED(hr))
		{

		ThrowError(pICommandText,
COLEDBERR::eGetData, "CheckSPVersion()");
		}

		// Release row(s)
		hr = pRowset->Release();

		pICommandText->Release();

		// Check the retrieved version
		if (strcmp(db_sp_version,sVersion))
				throw
new CTPCC_OLEDB_ERR(
CTPCC_OLEDB_ERR::ERR_WRONG_SP_VERSION
);
}

void CTPCC_OLEDB::ThrowError( IUnknown*
pObjectWithError, COLEDBERR::ACTION eAction,
LPCTSTR szLocation)
{
		HRESULT
				hr;

		//char

		szState[6];
		char

		szMsg[SQL_MAX_MESSAGE_LENGT
H];
		char

		szTmp[6*SQL_MAX_MESSAGE_LEN
GTH];
		COLEDBERR
			*pOLEDBErr;
			// not allocated until
needed (maybe never)
		int

		iLen;
		// Interfaces
		IErrorInfo*		pIErrorInfoAll
= NULL;
		IErrorInfo*
pIErrorInfoRecord	= NULL;
		IErrorRecords*
pIErrorRecords		= NULL;
		ISupportErrorInfo*
pISupportErrorInfo	= NULL;
		ISQLServerErrorInfo*
pISQLServerErrorInfo	= NULL;
		ISQLErrorInfo*
			pISQLErrorInfo	=
NULL;

		// Information used when cannot
get custom error object
		ERRORINFO
			BasicErrorInfo;
		BSTR

		bstrDescription;
		// Number of error records.
		ULONG		nRecs;
		ULONG		nRec;

		// SQL Server error information
from ISQLServerErrorInfo.
		SSERRORINFO*
pSSErrorInfo = NULL;
		OLECHAR*
pSSErrorStrings = NULL;

		assert(pObjectWithError != NULL);

		pOLEDBErr = new
COLEDBERR(szLocation);

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

		szTmp[0] = 0;

		// Only ask for error information if
the interface supports it.
		// Note: SQLOLEDB provider
supports error interface, so this check is
		// for good style only.
		hr = pObjectWithError-
>QueryInterface(IID_ISupportErrorInfo, (void**)
&pISupportErrorInfo);
```

```
		if (FAILED(hr))
		{
			_snprintf(szMsg, sizeof(szMsg), "SupportErrorInfo interface not supported (hr=0x%X)", hr);
			pOLEDBErr->m_OLEDBErrStr = new char[strlen(szMsg)+1];
			strcpy(pOLEDBErr->m_OLEDBErrStr, szMsg);
			throw pOLEDBErr;
		}
		/*if (FAILED(pISupportErrorInfo->InterfaceSupportsErrorInfo(IID_InterfaceWithError)))
		{
			_snprintf(szMsg, sizeof(szMsg), "InterfaceWithError interface not supported");
			pOLEDBErr->m_OLEDBErrStr = new char[strlen(szMsg)+1];
			strcpy(pOLEDBErr->m_OLEDBErrStr, szMsg);
			return;
		}*/

		// Do not test the return of GetErrorInfo. It can succeed and return
		// a NULL pointer in pIErrorInfoAll. Simply test the pointer.
		GetErrorInfo(0, &pIErrorInfoAll);

		if (pIErrorInfoAll != NULL)
		{
			// Test to see if it's a valid OLE DB IErrorInfo interface
			// exposing a list of records.
			if (SUCCEEDED(pIErrorInfoAll->QueryInterface(IID_IErrorRecords, (void**) &pIErrorRecords)))
			{

		pIErrorRecords->GetRecordCount(&nRecs);

				// Within each record, retrieve information from each
				// of the defined interfaces.
				for (nRec = 0; nRec < nRecs; nRec++)
				{

		// Request the generic SQL error interface.

		pIErrorRecords->GetCustomErrorObject(nRec,


			IID_ISQLErrorInfo, // generic SQL error interface

			(IUnknown**) &pISQLErrorInfo);


		if (pISQLErrorInfo != NULL)

		{
```

```
				// Request SQL Server-specific error interface, not the generic SQL error interface.
			pISQLErrorInfo->QueryInterface(


		IID_ISQLServerErrorInfo, // SQL Server error interface


					(void**) &pISQLServerErrorInfo);

		}


		// Test to ensure the reference is valid, then

		// get error information from ISQLServerErrorInfo.

		if (pISQLServerErrorInfo != NULL)

		{

			pISQLServerErrorInfo->GetErrorInfo(&pSSErrorInfo, &pSSErrorStrings);


			// ISQLServerErrorInfo::GetErrorInfo succeeds

			// even when it has nothing to return. Test the

			// pointers before using.

			if (pSSErrorInfo)

			{

				// First, add the error message.

				// Convert Unicode error string to ANSI.

		WideCharToMultiByte(CP_THREAD_ACP, 0,

			pSSErrorInfo->pwszMessage, -1,

			szMsg, sizeof(szMsg),

			NULL, NULL);


				// 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, "\r\n");

				// concatenate the error record to the overall error message

				strcat( szTmp, szMsg );

				// Second, add the stored procedure name and line number, if available.

				if (wcslen(pSSErrorInfo->pwszProcedure)>0)

				{

		// Prefix with a line break

		iLen = sprintf(szMsg, "\r\nProcedure: ");


		// Convert Unicode error string to ANSI.

		WideCharToMultiByte(CP_THREAD_ACP, 0,

			pSSErrorInfo->pwszProcedure, -1,

			&szMsg[iLen], sizeof(szMsg) - iLen,

			NULL, NULL);


		// Check if have space to add the line number.

		// Assume the line number takes no more than 3 digits.

		if ((strlen(szMsg) + 4)< sizeof(szMsg))

		{
```

```
            _snprintf(&szMsg[strlen(szMsg)],
sizeof(szMsg),

                                    ":%d",
pSSErrorInfo->wLineNumber);

            }


            // quit if there isn't enough room to
concatenate error text

            if ( (strlen(szMsg) + 2) >
(sizeof(szTmp) - strlen(szTmp)) )

                        break;


            // concatenate the error record to
the overall error message

            strcat( szTmp, szMsg );


            // copy the overall error string to
the exception

            pOLEDBErr->m_OLEDBErrStr =
new char[strlen(szTmp)+1];

            strcpy(pOLEDBErr-
>m_OLEDBErrStr, szTmp);
                                    }


                                    // Third,
capture the (first) database error

                                    if
(pOLEDBErr->m_NativeError == 0 &&
pSSErrorInfo->lNative != 0)

                                    {


            pOLEDBErr->m_NativeError =
pSSErrorInfo->lNative;



            // Check for deadlock error code
and set the deadlock flag

            if (pSSErrorInfo->lNative == 1205)


            {
                                    pOLEDBErr-
>m_bDeadLock = TRUE;

            }

                                    }



                                    //
IMalloc::Free needed to release references

                                    // on
returned values.

                                    if
(m_pIMalloc != NULL)

                                    {


            m_pIMalloc-
>Free(pSSErrorStrings);


            m_pIMalloc->Free(pSSErrorInfo);

                                    }

                        }


                        pISQLServerErrorInfo-
>Release();

            }

            else

            {

                        // Custom error object
is not supported.

                        // Use general OLE-
DB error interface.


                        // Get the numeric
error code

                        pIErrorRecords-
>GetBasicErrorInfo(nRec, &BasicErrorInfo);



                        if (pOLEDBErr-
>m_NativeError == 0)

                        {           // Get
the failed call HRESULT code, which is not really
the native error

            pOLEDBErr->m_NativeError =
BasicErrorInfo.hrError;

                        }


                        // Try to get the string
description of the error.
                        pIErrorRecords-
>GetErrorInfo(nRec, LOCALE_USER_DEFAULT,
(IErrorInfo**)&pIErrorInfoRecord);


                        if (pIErrorInfoRecord)

                        {



            pIErrorInfoRecord-
>GetDescription(&bstrDescription);


                                    //
Convert Unicode error string to ANSI.

            WideCharToMultiByte(CP_THREAD_
ACP, 0,


            bstrDescription, -1,


            szMsg, sizeof(szMsg),


            NULL, NULL);


            pOLEDBErr->m_OLEDBErrStr =
new char[strlen(szMsg)+1];


            strcpy(pOLEDBErr-
>m_OLEDBErrStr, szMsg);



                        }

            }
                                    }
            // for()
                        }           // if
(SUCCEEDED(pIErrorInfoAll-
>QueryInterface(IID_IErrorRecords, (void**)
&pIErrorRecords)))
                        else
                        {           // No
IErrorRecords interface supported. Use default
IErrorInfo.
                        // Note:
SQLOLEDB supports IErrorRecords, so this check
is for good style only.

            _snprintf(szMsg, sizeof(szMsg),
"IErrorRecords interface not supported");


            pOLEDBErr->m_OLEDBErrStr =
new char[strlen(szMsg)+1];

            strcpy(pOLEDBErr-
>m_OLEDBErrStr, szMsg);
                        }
```

```
                pIErrorInfoAll->Release();
        }       // if (pIErrorInfoAll != NULL)
        else
        {
                // No IErrorInfo interface supported.
                // Note: SQLOLEDB supports IErrorInfo, so this check is for good style only.
                _snprintf(szMsg, sizeof(szMsg), "IErrorInfo interface not supported");
                pOLEDBErr->m_OLEDBErrStr = new char[strlen(szMsg)+1];
                strcpy(pOLEDBErr->m_OLEDBErrStr, szMsg);
        }

        throw pOLEDBErr;
}

/*
*
*       Create a new command object from the SQL text passed in.
*
*/
void CTPCC_OLEDB::CreateCommand(wchar_t* szSQLCommand,
        // I: SQL query for the command

                ICommandText** ppICommandText   // O: returned command object

                )
{
        HRESULT
                hr;

        // Create a new command object
        hr = m_pIDBCreateCommand->CreateCommand(NULL, IID_ICommandText, (IUnknown **)ppICommandText);
        if (FAILED(hr))
        {

        ThrowError(m_pIDBCreateCommand, COLEDBERR::eCreateCommand, "CTPCC_OLEDB::CreateCommand");
        }

        // Set command text
        hr = (*ppICommandText)->SetCommandText(DBGUID_SQL, szSQLCommand);
        if (FAILED(hr))
        {

        ThrowError(*ppICommandText, COLEDBERR::eSetCommandText, "CTPCC_OLEDB::CreateCommand");
        }

        // Prepare the command
        PrepareCommand(*ppICommandText);
}

/*
*       QueryInterface and Prepare in one function for simplicity.
*       DEFERRED PREPARE property is set to off to prepare immediatelly.
*/
void CTPCC_OLEDB::PrepareCommand(ICommandText* pICommandText)
{
        HRESULT
                hr;
        ICommandPrepare*
        pICommandPrepare;
        ICommandProperties*
        pICommandProperties;

        DBPROPSET
        rowSetPropSet;
        DBPROP
                rowSetProp;

        // Set the deferred prepare property to false.
        rowSetProp.dwPropertyID = SSPROP_DEFERPREPARE;
        memset(&rowSetProp.vValue, 0, sizeof(rowSetProp.vValue));
        rowSetProp.dwOptions = DBPROPOPTIONS_REQUIRED;
        rowSetProp.colid = DB_NULLID;

        rowSetPropSet.cProperties = 1;
        rowSetPropSet.guidPropertySet = DBPROPSET_SQLSERVERROWSET;
        rowSetPropSet.rgProperties = &rowSetProp;

        // Query interface for setting properties
        hr = pICommandText->QueryInterface(IID_ICommandProperties, (void **)&pICommandProperties);
        if (FAILED(hr))
        {

        ThrowError(pICommandText, COLEDBERR::eQueryInterface, "CTPCC_OLEDB::PrepareCommand");
        }

        // Set the property set
        hr = pICommandProperties->SetProperties(1, &rowSetPropSet);
        if (FAILED(hr))
        {

        ThrowError(pICommandText, COLEDBERR::eQueryInterface, "CTPCC_OLEDB::PrepareCommand");
        }

        // Get interface for preparing commands
        hr = pICommandText->QueryInterface(IID_ICommandPrepare, (void **)&pICommandPrepare);
        if (FAILED(hr))
        {

        ThrowError(pICommandText, COLEDBERR::eQueryInterface, "CTPCC_OLEDB::PrepareCommand");
        }

        // Prepare Payment command
        hr = pICommandPrepare->Prepare(0xFFFFFFFF);
        if (FAILED(hr))
        {

        ThrowError(pICommandPrepare, COLEDBERR::ePrepare, "CTPCC_OLEDB::PrepareCommand");
        }
}

/*
*       Initialize fields of an array of bindings structures.
*       Needs to be called before setting individual parameter/column bindings.

*/
void CTPCC_OLEDB::InitBindings(DBBINDING* pDBBindings, // IO: array of bindings


        int iCount,
                                // I: number of elements in the array


        eBindingType BindingType)
        // I: what the bindings will be used for (parameters/columns)
{
        int i;

        for(i = 0; i < iCount; i++)
   {

        pDBBindings[i].iOrdinal = i + 1;
     pDBBindings[i].obLength = 0;
     pDBBindings[i].obStatus = 0;
     pDBBindings[i].pTypeInfo = NULL;
     pDBBindings[i].pObject = NULL;
     pDBBindings[i].pBindExt = NULL;
     pDBBindings[i].dwPart = DBPART_VALUE;

                switch (BindingType)
                {
                case eInputParameter:

        pDBBindings[i].eParamIO = DBPARAMIO_INPUT;
                        break;
                case eOutputParameter:

        pDBBindings[i].eParamIO = DBPARAMIO_OUTPUT;
                        break;
                case eInputOutputParameter:

        pDBBindings[i].eParamIO = DBPARAMIO_INPUT | DBPARAMIO_OUTPUT;
                        break;
                case eOutputColumn:

        pDBBindings[i].eParamIO = DBPARAMIO_NOTPARAM;
                        break;
                default:

        assert(false); // this should never happen
                }
```

```
        pDBBindings[i].dwMemOwner =
DBMEMOWNER_CLIENTOWNED;
        pDBBindings[i].dwFlags = 0;

                pDBBindings[i].bPrecision = 0;
        pDBBindings[i].bScale = 0;

    }
}

/*
*               Perform binding for one parameter
or output column.
*
*/
void CTPCC_OLEDB::SetBinding(DBBINDING*
pDBBinding, // I: binding row structure


                size_t obValue,
                        // I: parameter
(column) offset in the user buffer


                size_t cbMaxLen,
                // I: parameter (column) length


                DBTYPE wType
                        // I: parameter
(column) type


                )
{
                pDBBinding->obValue =
(ULONG)obValue;
                pDBBinding->cbMaxLen =
(ULONG)cbMaxLen;
                pDBBinding->wType = wType;
}

void CTPCC_OLEDB::InitStockLevelParams()
{
                int

                i;
                HRESULT
                                        hr;
                wchar_t

                szName[iMAX_SP_NAME_LEN];
                IAccessor*
                        pIAccessor;

    const ULONG
                        nInputParams = 3;
                // input parameters
                const ULONG
                        nOutputParams = 1;
                // output 1st result set columns

                // Structure to bind in accessor
                DBBINDING

                acInputDBBinding[nInputParams];
                DBBINDSTATUS

                acInputDBBindStatus[nInputParams
];
                DBBINDING

                acOutputDBBinding[nOutputParams
];
                DBBINDSTATUS

                acOutputDBBindStatus[nOutputPara
ms];
                // Set command text
                _snwprintf(szName,
sizeof(szName)/sizeof(szName[0]),
                                        L"{call
%stpcc_stocklevel (?,?,?)}", m_szSPPrefix);


                // Create and Prepare a new
command object for StockLevel.
                CreateCommand(szName,
&m_pIStockLevelCommand);


                // Describe the consumer buffer by
filling in the array

    // of DBBINDING structures.  Each binding
associates
    // a single parameter to the consumer's buffer.
                InitBindings(&acInputDBBinding[0],
nInputParams, eInputParameter);

                i = 0;
    // StockLevel parameter 1
                SetBinding(&acInputDBBinding[i++
], offsetof(STOCK_LEVEL_DATA, w_id),
sizeof(m_txn.StockLevel.w_id), DBTYPE_I4);

    // StockLevel parameter 2
                SetBinding(&acInputDBBinding[i++
], offsetof(STOCK_LEVEL_DATA, d_id),
sizeof(m_txn.StockLevel.d_id), DBTYPE_UI1);

                // StockLevel parameter 3
                SetBinding(&acInputDBBinding[i++
], offsetof(STOCK_LEVEL_DATA, threshold),
sizeof(m_txn.StockLevel.threshold), DBTYPE_I2);

                hr = m_pIStockLevelCommand-
>QueryInterface(IID_IAccessor, (void
**)&pIAccessor);
                if (FAILED(hr))
                {

                ThrowError(m_pIStockLevelComma
nd, COLEDBERR::eQueryInterface,
"InitStockLevelParams()");
                }

                hr = pIAccessor->CreateAccessor(

DBACCESSOR_PARAMETERDATA,
                        nInputParams,
                        acInputDBBinding,
                        sizeof(STOCK_LEVEL_DATA),

&m_hStockLevelInputAccessor,
                        acInputDBBindStatus);
                if (FAILED(hr))
                {

                ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"InitStockLevelParams()");
                }

                m_StockLevelExecuteParams.cPara
mSets = 1;
                m_StockLevelExecuteParams.hAcce
ssor = m_hStockLevelInputAccessor;
                m_StockLevelExecuteParams.pData
= &m_txn.StockLevel;
                // Now fill the binding information
for result set 1 output columns
                InitBindings(&acOutputDBBinding[0
], nOutputParams, eOutputColumn);

                // Binding for a rowset that may
return more than one row.
                i = 0;
                // StockLevel output column 1
                SetBinding(&acOutputDBBinding[i+
+], offsetof(STOCK_LEVEL_DATA, low_stock),
sizeof(m_txn.StockLevel.low_stock),
DBTYPE_I4);

                hr = pIAccessor->CreateAccessor(

                        DBACCESSOR_ROWDATA |
DBACCESSOR_OPTIMIZED,

                        nOutputParams,
                        acOutputDBBinding,
                        sizeof(STOCK_LEVEL_DATA),

&m_hStockLevelOutputAccessor,
                        acOutputDBBindStatus);
                if (FAILED(hr))
                {

                ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"InitStockLevelParams()");
                }
}

void CTPCC_OLEDB::StockLevel()
{
                HRESULT
                hr;
                int
                                iTryCount = 0;
                IRowset*
                pRowset;
                LONG
                cRows = 1;   // number of rows
returned in the rowset
                ULONG
                cRowsObtained;
                HROW
                rghRow;
                //returned row handles
                HROW*
                prghRow = &rghRow;

                while (TRUE)
                {
                        try
                        {
                                                //
Execute the prepared command
                                                hr =
m_pIStockLevelCommand->Execute(NULL,
IID_IRowset, &m_StockLevelExecuteParams,
NULL,



                                                (IUnknown
**)&pRowset);
                                                if
(FAILED(hr))
                                                {
```

```
                ThrowError(m_pIStockLevelComma
nd, COLEDBERR::eExecute, "StockLevel()");
                                }

                                // Fetch
the result row handle(s)
                                hr =
pRowset->GetNextRows(DB_NULL_HCHAPTER,
0, cRows, &cRowsObtained, &prghRow);
                                if
(FAILED(hr))
                                {

                ThrowError(m_pIStockLevelComma
nd, COLEDBERR::eGetNextRows, "StockLevel()");
                                }

                                // Fetch
the actual row data by handle
                                hr =
pRowset->GetData(rghRow,
m_hStockLevelOutputAccessor,
&m_txn.StockLevel);
                                if
(FAILED(hr))
                                {

                ThrowError(m_pIStockLevelComma
nd, COLEDBERR::eGetData, "StockLevel()");
                                }

                                //
Release row(s)
                                hr =
pRowset->ReleaseRows(cRowsObtained,
prghRow, NULL, NULL, NULL);
                                //
Release rowset
                                hr =
pRowset->Release();


                m_txn.StockLevel.exec_status_code
= eOK;

                                break;
                        }
                        catch (COLEDBERR
*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_OLEDB_ERR(CTPCC_OLEDB_ERR::ERR_R
ETRIED_TRANS, iTryCount);
}

void CTPCC_OLEDB::InitNewOrderParams()
{
                int

                HRESULT
                                hr;
                wchar_t

                szName[iMAX_SP_NAME_LEN];
                IAccessor*
                        pIAccessor;

    const ULONG
                        nInputParams = 5 +
3*MAX_OL_NEW_ORDER_ITEMS;       // input
parameters
                const ULONG
                        nOutputParams = 5;
                // output 1st result set columns
                const ULONG
                        nOutputParams2 = 8;
                // output 2nd result set columns
                // Structure to bind in accessor
                DBBINDING

                acInputDBBinding[nInputParams];

                DBBINDSTATUS

                acInputDBBindStatus[nInputParams
];
                DBBINDING

                acOutputDBBinding[nOutputParams
];
                DBBINDSTATUS

                acOutputDBBindStatus[nOutputPara
ms];
                DBBINDING

                acOutputDBBinding2[nOutputParam
s2];
                DBBINDSTATUS

                acOutputDBBindStatus2[nOutputPar
ams2];

                // Describe the consumer buffer by
filling in the array
    // of DBBINDING structures.  Each binding
associates
    // a single parameter to the consumer's buffer.
                InitBindings(&acInputDBBinding[0],
nInputParams, eInputParameter);

                i = 0;
    // NewOrder parameter 1
                SetBinding(&acInputDBBinding[i++
], offsetof(NEW_ORDER_DATA, w_id),
sizeof(m_txn.NewOrder.w_id), DBTYPE_I4);

    // NewOrder parameter 2
                SetBinding(&acInputDBBinding[i++
], offsetof(NEW_ORDER_DATA, d_id),
sizeof(m_txn.NewOrder.d_id), DBTYPE_UI1);

                // NewOrder parameter 3
                SetBinding(&acInputDBBinding[i++
], offsetof(NEW_ORDER_DATA, c_id),
sizeof(m_txn.NewOrder.c_id), DBTYPE_I4);

                // NewOrder parameter 4
                SetBinding(&acInputDBBinding[i++
], offsetof(NEW_ORDER_DATA, o_ol_cnt),
sizeof(m_txn.NewOrder.o_ol_cnt), DBTYPE_UI1);

                // NewOrder parameter 5
                SetBinding(&acInputDBBinding[i++
], offsetof(NEW_ORDER_DATA, o_all_local),
sizeof(m_txn.NewOrder.o_all_local),
DBTYPE_UI1);

                for (j=0;
j<MAX_OL_NEW_ORDER_ITEMS; j++)
                {

                SetBinding(&acInputDBBinding[i++
], offsetof(NEW_ORDER_DATA, OL[j].ol_i_id),
sizeof(m_txn.NewOrder.OL[j].ol_i_id),
DBTYPE_I4);

                SetBinding(&acInputDBBinding[i++
], offsetof(NEW_ORDER_DATA,
OL[j].ol_supply_w_id),
sizeof(m_txn.NewOrder.OL[j].ol_supply_w_id),
DBTYPE_I4);


                SetBinding(&acInputDBBinding[i++
], offsetof(NEW_ORDER_DATA,
OL[j].ol_quantity),
sizeof(m_txn.NewOrder.OL[j].ol_quantity),
DBTYPE_I2);


                }


                // Now fill the binding information
for result set 1 output columns
                InitBindings(&acOutputDBBinding[0
], nOutputParams, eOutputColumn);

                // Binding for the order line rowsets
(each consist of one row).
                // Bind to offsets of the
OL_NEW_ORDER_DATA structure instead of
NEW_ORDER_DATA.
                // IRowset::GetData() will be
passed individual array slots OL[i] to fetch the
data
                // from the row set.

                i = 0;
                // NewOrder output column 1
                SetBinding(&acOutputDBBinding[i+
+], offsetof(OL_NEW_ORDER_DATA, ol_i_name),
sizeof(m_txn.NewOrder.OL[0].ol_i_name),
DBTYPE_STR);

                // NewOrder output column 2
                SetBinding(&acOutputDBBinding[i+
+], offsetof(OL_NEW_ORDER_DATA, ol_stock),
sizeof(m_txn.NewOrder.OL[0].ol_stock),
DBTYPE_I2);

                // NewOrder output column 3
                SetBinding(&acOutputDBBinding[i+
+], offsetof(OL_NEW_ORDER_DATA,
ol_brand_generic),
sizeof(m_txn.NewOrder.OL[0].ol_brand_generic),
DBTYPE_STR);

                // NewOrder output column 4
                SetBinding(&acOutputDBBinding[i+
+], offsetof(OL_NEW_ORDER_DATA, ol_i_price),
sizeof(m_txn.NewOrder.OL[0].ol_i_price),
DBTYPE_R8);

                // NewOrder output column 5
```

```
		SetBinding(&acOutputDBBinding[i++], offsetof(OL_NEW_ORDER_DATA, ol_amount), sizeof(m_txn.NewOrder.OL[0].ol_amount), DBTYPE_R8);


		// Now fill the binding information for result set 2 output columns
		InitBindings(&acOutputDBBinding2[0], nOutputParams2, eOutputColumn);

		i = 0;
		// NewOrder output column 1
		SetBinding(&acOutputDBBinding2[i++], offsetof(NEW_ORDER_DATA, w_tax), sizeof(m_txn.NewOrder.w_tax), DBTYPE_R8);

		// NewOrder output column 2
		SetBinding(&acOutputDBBinding2[i++], offsetof(NEW_ORDER_DATA, d_tax), sizeof(m_txn.NewOrder.d_tax), DBTYPE_R8);

		// NewOrder output column 3
		SetBinding(&acOutputDBBinding2[i++], offsetof(NEW_ORDER_DATA, o_id), sizeof(m_txn.NewOrder.o_id), DBTYPE_I4);

		// NewOrder output column 4
		SetBinding(&acOutputDBBinding2[i++], offsetof(NEW_ORDER_DATA, c_last), sizeof(m_txn.NewOrder.c_last), DBTYPE_STR);

		// NewOrder output column 5
		SetBinding(&acOutputDBBinding2[i++], offsetof(NEW_ORDER_DATA, c_discount), sizeof(m_txn.NewOrder.c_discount), DBTYPE_R8);

		// NewOrder output column 6
		SetBinding(&acOutputDBBinding2[i++], offsetof(NEW_ORDER_DATA, c_credit), sizeof(m_txn.NewOrder.c_credit), DBTYPE_STR);

		// NewOrder output column 7
		SetBinding(&acOutputDBBinding2[i++], offsetof(NEW_ORDER_DATA, o_entry_d), sizeof(m_txn.NewOrder.o_entry_d), DBTYPE_DBTIMESTAMP);

		// NewOrder output column 8
		SetBinding(&acOutputDBBinding2[i++], offsetof(NEW_ORDER_DATA, o_commit_flag), sizeof(m_txn.NewOrder.o_commit_flag), DBTYPE_I2);

		for (j=0; j<MAX_OL_NEW_ORDER_ITEMS; j++)
		{
			// Set command text first

			// Print the fixed first portion of parameters
			i = _snwprintf(szName, sizeof(szName)/sizeof(szName[0]),

			L"{call %stpcc_neworder (?,?,?,?,?,?", m_szSPPrefix);

			// Now print the variable portion depending on the number of order line parameters	for (iOlCount = 0; iOlCount <= j; ++iOlCount)
			{
				i += _snwprintf(&szName[i], sizeof(szName)/sizeof(szName[0]) - i, L",?,?,?,?");


			}

			// Print the fixed end
			if (j != MAX_OL_NEW_ORDER_ITEMS - 1)
			{		// append 'default' for the parameters that are not used
				i += _snwprintf(&szName[i], sizeof(szName)/sizeof(szName[0]) - i, L",default)}");
			}
			else		// using all 15 order line parameters
			{
				i += _snwprintf(&szName[i], sizeof(szName)/sizeof(szName[0]) - i, L")}");


			}

			// Create and Prepare a new command object for NewOrder.

		CreateCommand(szName, &m_pINewOrderCommand[j]);

			// Now create the input accessor for this prepared command
			hr = m_pINewOrderCommand[j]->QueryInterface(IID_IAccessor, (void **)&pIAccessor);
			if (FAILED(hr))
			{

		ThrowError(m_pINewOrderCommand[j], COLEDBERR::eQueryInterface, "InitNewOrderParams()");
			}

			hr = pIAccessor->CreateAccessor(


			DBACCESSOR_PARAMETERDATA,


			5 + 3 * (j + 1),


			acInputDBBinding,


			sizeof(NEW_ORDER_DATA),


			&m_hNewOrderInputAccessor[j],


			acInputDBBindStatus);
			if (FAILED(hr))
			{

		ThrowError(pIAccessor, COLEDBERR::eCreateAccessor, "InitNewOrderParams()");
			}



		m_NewOrderExecuteParams[j].cParamSets = 1;
			// m_NewOrderExecuteParams.hAccessor is set dynamically at run-time
			// based on the number of new order items for the particular transaction call.

		m_NewOrderExecuteParams[j].hAccessor = m_hNewOrderInputAccessor[j];


		m_NewOrderExecuteParams[j].pData = &m_txn.NewOrder;


			// Create accessor for the first rowset
			hr = pIAccessor->CreateAccessor(

		DBACCESSOR_ROWDATA | DBACCESSOR_OPTIMIZED,

		nOutputParams,

		acOutputDBBinding,

		sizeof(OL_NEW_ORDER_DATA),

		&m_hNewOrderOutputAccessor[j],

		acOutputDBBindStatus);
			if (FAILED(hr))
			{

		ThrowError(pIAccessor, COLEDBERR::eCreateAccessor, "InitNewOrderParams()");
			}

			// Create accessor for the second rowset
			hr = pIAccessor->CreateAccessor(

		DBACCESSOR_ROWDATA, // cannot be optimized too because #1 accessor is

		nOutputParams2,

		acOutputDBBinding2,

		sizeof(NEW_ORDER_DATA),

		&m_hNewOrderOutputAccessor2[j],
```

```
            acOutputDBBindStatus2);
                        if (FAILED(hr))
                        {

            ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"InitNewOrderParams()");
                        }

                        pIAccessor-
>Release();
            }
}

void CTPCC_OLEDB::NewOrder()
{
            HRESULT
                        hr;
            int

            iTryCount = 0;
            IMultipleResults*
            pMultipleResults;
            IRowset*
            pRowset;
            IRowset*
            pRowset2;
            LONG
                        cRows = 1;   //
number of rows returned in the 1st rowset
            ULONG
                        cRowsObtained;
            HROW
                        rghRows;
            //returned row handles for the 1st
result set
            HROW*
                        prghRows =
&rghRows;
            LONG
                        cRows2 = 1; //
number of rows returned in the 2nd rowset
            ULONG
                        cRowsObtained2;

            HROW
                        rghRows2;
            //returned row handle for the 2nd
result set
            HROW*
                        prghRows2 =
&rghRows2;
            int
                                    i;
            long
                        lRowsAffected;
            // the number of affected rows for
a rowset
            int

            iHandleIndex;               // index
into the handle arrays based on the orders count

            // 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;
                        }
            }

            iHandleIndex =
m_txn.NewOrder.o_ol_cnt - 1;            // for
convenience

            while (TRUE)
            {
                        try
                        {
                                    //
Execute the prepared command (according to the
number of new orders)
                                    // Ask
for IMultipleResults because it returns 2 rowsets.
                                    hr =
m_pINewOrderCommand[iHandleIndex]-
>Execute(



                                    NULL,
IID_IMultipleResults,




            &m_NewOrderExecuteParams[iHan
dleIndex],



                                    NULL,



                                    (IUnknown
**)&pMultipleResults);
                                    if
(FAILED(hr))
                                    {

            ThrowError(m_pINewOrderComma
nd[iHandleIndex], COLEDBERR::eExecute,
"NewOrder()");
                                    }


            ////////////////////////////
                                    // Get
order line results

            ////////////////////////////

            m_txn.NewOrder.total_amount = 0;
                                    for (i =
0; i < m_txn.NewOrder.o_ol_cnt; ++i)
                                    {

            // Get the first rowset object

            hr = pMultipleResults-
>GetResult(NULL, 0, IID_IRowset,
&lRowsAffected, (IUnknown **)&pRowset);

            if (FAILED(hr))

            {
                                                char szTmp[256];

                                                _snprintf(szTmp,
sizeof(szTmp), "NewOrder() result set %d,
hr=0x%X", i, hr);



            ThrowError(m_pINewOrderComma
nd[m_txn.NewOrder.o_ol_cnt - 1],
COLEDBERR::eGetResult, szTmp);

            }


            // Fetch the result row handle(s)

            hr = pRowset-
>GetNextRows(DB_NULL_HCHAPTER, 0, cRows,
&cRowsObtained, &prghRows);

            if (FAILED(hr))

            {


            ThrowError(m_pINewOrderComma
nd[iHandleIndex], COLEDBERR::eGetNextRows,
"NewOrder()");


            }


            // Fetch the actual row data by
handle

            hr = pRowset->GetData(rghRows,
m_hNewOrderOutputAccessor[iHandleIndex],
&m_txn.NewOrder.OL[i]);

            if (FAILED(hr))

            {


            ThrowError(m_pINewOrderComma
nd[iHandleIndex], COLEDBERR::eGetData,
"NewOrder()");

            }


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


            // Release row(s)

            hr = pRowset-
>ReleaseRows(cRowsObtained, prghRows, NULL,
NULL, NULL);

            // Release rowset

            hr = pRowset->Release();

                                    }


            ////////////////////////////////
                                    // Get
the second rowset object
```

```
            ////////////////////////////////
                                    hr =
pMultipleResults->GetResult(NULL, 0,
IID_IRowset, &lRowsAffected, (IUnknown
**)&pRowset2);
                                    if
(FAILED(hr))
                                    {

            char szTmp[256];


            _snprintf(szTmp, sizeof(szTmp),
"NewOrder() result set %d, hr=%d", i, hr);


            ThrowError(m_pINewOrderComma
nd[iHandleIndex], COLEDBERR::eGetResult,
szTmp);
                                    }

                                    // Fetch
the result row handle(s)
                                    hr =
pRowset2->GetNextRows(DB_NULL_HCHAPTER,
0, cRows2, &cRowsObtained2, &prghRows2);
                                    if
(FAILED(hr))
                                    {

            ThrowError(m_pINewOrderComma
nd[iHandleIndex], COLEDBERR::eGetNextRows,
"NewOrder()");
                                    }

                                    // Fetch
the actual row data by handle
                                    hr =
pRowset2->GetData(rghRows2,
m_hNewOrderOutputAccessor2[iHandleIndex],
&m_txn.NewOrder);
                                    if
(FAILED(hr))
                                    {

            ThrowError(m_pINewOrderComma
nd[iHandleIndex], COLEDBERR::eGetData,
"NewOrder()");
                                    }


                                    //
Release row(s)
                                    hr =
pRowset2->ReleaseRows(cRowsObtained2,
prghRows2, NULL, NULL, NULL);
                                    //
Release rowset
                                    hr =
pRowset2->Release();


                                    //
Release the common MultipleResults interface
                                    hr =
pMultipleResults->Release();


                                    if
(m_txn.NewOrder.o_all_local == 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;
                                    }

                                    break;

                        }
                        catch (COLEDBERR
*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_OLEDB_ERR(CTPCC_OLEDB_ERR::ERR_R
ETRIED_TRANS, iTryCount);
}

void CTPCC_OLEDB::InitPaymentParams()
{
            int

            i;
            HRESULT
                                    hr;
            wchar_t

            szName[iMAX_SP_NAME_LEN];
            IAccessor*
                        pIAccessor;

   const ULONG
                        nInputParams = 7;
            // input parameters
            const ULONG
                        nOutputParams = 27;
            // output result set columns
            // Structure to bind in accessor
            DBBINDING

            acInputDBBinding[nInputParams];
            DBBINDSTATUS

            acInputDBBindStatus[nInputParams
];
            DBBINDING

            acOutputDBBinding[nOutputParams
];
            DBBINDSTATUS

            acOutputDBBindStatus[nOutputPara
ms];

            // Set command text

            _snwprintf(szName,
sizeof(szName)/sizeof(szName[0]), L"{call
%stpcc_payment(?,?,?,?,?,?,?)}", m_szSPPrefix);
            // Create and Prepare a new
command object for Payment.
            CreateCommand(szName,
&m_pIPaymentCommand);

            // Describe the consumer buffer by
filling in the array
   // of DBBINDING structures.  Each binding
associates
   // a single parameter to the consumer's buffer.
            InitBindings(&acInputDBBinding[0],
nInputParams, eInputParameter);

            i = 0;
   // Payment parameter 1
            SetBinding(&acInputDBBinding[i++
], offsetof(PAYMENT_DATA, w_id),
sizeof(m_txn.Payment.w_id), DBTYPE_I4);

   // Payment parameter 2
            SetBinding(&acInputDBBinding[i++
], offsetof(PAYMENT_DATA, c_w_id),
sizeof(m_txn.Payment.c_w_id), DBTYPE_I4);

            // Payment parameter 3
            SetBinding(&acInputDBBinding[i++
], offsetof(PAYMENT_DATA, h_amount),
sizeof(m_txn.Payment.h_amount), DBTYPE_R8);


   // Payment parameter 4
            SetBinding(&acInputDBBinding[i++
], offsetof(PAYMENT_DATA, d_id),
sizeof(m_txn.Payment.d_id), DBTYPE_UI1);

            // Payment parameter 5
            SetBinding(&acInputDBBinding[i++
], offsetof(PAYMENT_DATA, c_d_id),
sizeof(m_txn.Payment.c_d_id), DBTYPE_UI1);

            // Payment parameter 6
            SetBinding(&acInputDBBinding[i++
], offsetof(PAYMENT_DATA, c_id),
sizeof(m_txn.Payment.c_id), DBTYPE_I4);

            // Payment parameter 7
            SetBinding(&acInputDBBinding[i++
], offsetof(PAYMENT_DATA, c_last),
sizeof(m_txn.Payment.c_last), DBTYPE_STR);

            hr = m_pIPaymentCommand-
>QueryInterface(IID_IAccessor, (void
**)&pIAccessor);
            if (FAILED(hr))
            {

            ThrowError(m_pIPaymentCommand
, COLEDBERR::eQueryInterface,
"InitPaymentParams()");
            }

            hr = pIAccessor->CreateAccessor(

DBACCESSOR_PARAMETERDATA,
                        nInputParams,
                        acInputDBBinding,
                        sizeof(PAYMENT_DATA),
                        &m_hPaymentInputAccessor,
                        acInputDBBindStatus);
            if (FAILED(hr))
            {
```

```
		ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"InitPaymentParams()");
		}

		m_PaymentExecuteParams.cParam
Sets = 1;
		m_PaymentExecuteParams.hAccess
or = m_hPaymentInputAccessor;
		m_PaymentExecuteParams.pData =
&m_txn.Payment;

		// Now fill the binding information
for output columns
		InitBindings(&acOutputDBBinding[0
], nOutputParams, eOutputColumn);

		i = 0;
		// Payment output column 1

		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_id),
sizeof(m_txn.Payment.c_id), DBTYPE_I4);

		// Payment output column 2
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_last),
sizeof(m_txn.Payment.c_last), DBTYPE_STR);

		// Payment output column 3
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, h_date),
sizeof(m_txn.Payment.h_date),
DBTYPE_DBTIMESTAMP);

		// Payment output column 4
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, w_street_1),
sizeof(m_txn.Payment.w_street_1),
DBTYPE_STR);

		// Payment output column 5
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, w_street_2),
sizeof(m_txn.Payment.w_street_2),
DBTYPE_STR);

		// Payment output column 6
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, w_city),
sizeof(m_txn.Payment.w_city), DBTYPE_STR);

		// Payment output column 7
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, w_state),
sizeof(m_txn.Payment.w_state), DBTYPE_STR);

		// Payment output column 8
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, w_zip),
sizeof(m_txn.Payment.w_zip), DBTYPE_STR);

		// Payment output column 9
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, d_street_1),
sizeof(m_txn.Payment.d_street_1),
DBTYPE_STR);

		// Payment output column 10
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, d_street_2),
sizeof(m_txn.Payment.d_street_2),
DBTYPE_STR);

		// Payment output column 11
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, d_city),
sizeof(m_txn.Payment.d_city), DBTYPE_STR);

		// Payment output column 12
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, d_state),
sizeof(m_txn.Payment.d_state), DBTYPE_STR);

		// Payment output column 13
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, d_zip),
sizeof(m_txn.Payment.d_zip), DBTYPE_STR);

		// Payment output column 14
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_first),
sizeof(m_txn.Payment.c_first), DBTYPE_STR);

		// Payment output column 15
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_middle),
sizeof(m_txn.Payment.c_middle), DBTYPE_STR);

		// Payment output column 16
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, d_street_1),
sizeof(m_txn.Payment.d_street_1),
DBTYPE_STR);

		// Payment output column 17
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, d_street_2),
sizeof(m_txn.Payment.d_street_2),
DBTYPE_STR);


		// Payment output column 18
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, d_city),
sizeof(m_txn.Payment.d_city), DBTYPE_STR);

		// Payment output column 19
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, d_state),
sizeof(m_txn.Payment.d_state), DBTYPE_STR);

		// Payment output column 20
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, d_zip),
sizeof(m_txn.Payment.d_zip), DBTYPE_STR);

		// Payment output column 21
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_phone),
sizeof(m_txn.Payment.c_phone), DBTYPE_STR);

		// Payment output column 22
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_since),
sizeof(m_txn.Payment.c_since),
DBTYPE_DBTIMESTAMP);

		// Payment output column 23
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_credit),
sizeof(m_txn.Payment.c_credit), DBTYPE_STR);

		// Payment output column 24
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_credit_lim),
sizeof(m_txn.Payment.c_credit_lim),
DBTYPE_R8);

		// Payment output column 25
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_discount),
sizeof(m_txn.Payment.c_discount), DBTYPE_R8);

		// Payment output column 26
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_balance),
sizeof(m_txn.Payment.c_balance), DBTYPE_R8);

		// Payment output column 27
		SetBinding(&acOutputDBBinding[i+
+], offsetof(PAYMENT_DATA, c_data),
sizeof(m_txn.Payment.c_data), DBTYPE_STR);

		hr = pIAccessor->CreateAccessor(
			DBACCESSOR_ROWDATA |
DBACCESSOR_OPTIMIZED,
			nOutputParams,
			acOutputDBBinding,
			sizeof(PAYMENT_DATA),

&m_hPaymentOutputAccessor,
			acOutputDBBindStatus);
		if (FAILED(hr))
		{

		ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"InitPaymentParams()");
		}
}

void CTPCC_OLEDB::Payment()

{
		HRESULT
		hr;
		int
				iTryCount = 0;
		IRowset*
		pRowset;
		LONG
		cRows = 1;   // number of rows
returned in the rowset
		ULONG
		cRowsObtained;
		HROW
		rghRow;
		//returned row handles
		HROW*
		prghRow = &rghRow;


		if (m_txn.Payment.c_id != 0)

		m_txn.Payment.c_last[0] = 0;

		while (TRUE)
		{
				try
				{
						//
Execute the prepared command
						hr =
m_pIPaymentCommand->Execute(NULL,
IID_IRowset, &m_PaymentExecuteParams,
NULL,



				(IUnknown
**)&pRowset);
						if
(FAILED(hr))
```

```
                                        {
                ThrowError(m_pIPaymentCommand
, COLEDBERR::eExecute, "Payment()");
                                        }

                                        // Fetch
the result row handle(s)
                                        hr =
pRowset->GetNextRows(DB_NULL_HCHAPTER,
0, cRows, &cRowsObtained, &prghRow);
                                        if
(FAILED(hr))
                                        {
                ThrowError(m_pIPaymentCommand
, COLEDBERR::eGetNextRows, "Payment()");
                                        }

                                        // Fetch
the actual row data by handle
                                        hr =
pRowset->GetData(rghRow,
m_hPaymentOutputAccessor, &m_txn.Payment);
                                        if
(FAILED(hr))
                                        {
                ThrowError(m_pIPaymentCommand
, COLEDBERR::eGetData, "Payment()");
                                        }

                                        //
Release row(s)
                                        hr =
pRowset->ReleaseRows(cRowsObtained,
prghRow, NULL, NULL, NULL);
                                        //
Release rowset
                                        hr =
pRowset->Release();

                                        if
(m_txn.Payment.c_id == 0)
                throw new CTPCC_OLEDB_ERR(
CTPCC_OLEDB_ERR::ERR_INVALID_CUST );
                                        else
                m_txn.Payment.exec_status_code
= eOK;

                                        break;
                                }
                                catch (COLEDBERR
*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_OLEDB_ERR(CTPCC_OLEDB_ERR::ERR_R
ETRIED_TRANS, iTryCount);
}
void CTPCC_OLEDB::InitOrderStatusParams()
{
                int

                i;
                HRESULT
                                        hr;
                wchar_t

                szName[iMAX_SP_NAME_LEN];
                IAccessor*
                                pIAccessor;

    const ULONG
                                nInputParams = 4;
                // input parameters
                const ULONG
                                nOutputParams = 5;
                // output 1st result set columns
                const ULONG
                                nOutputParams2 = 8;
                // output 2nd result set columns
                // Structure to bind in accessor
                DBBINDING

                acInputDBBinding[nInputParams];
                DBBINDSTATUS

                acInputDBBindStatus[nInputParams
];
                DBBINDING

                acOutputDBBinding[nOutputParams
];

                DBBINDSTATUS

                acOutputDBBindStatus[nOutputPara
ms];
                DBBINDING

                acOutputDBBinding2[nOutputParam
s2];
                DBBINDSTATUS

                acOutputDBBindStatus2[nOutputPar
ams2];

                // Set command text
                _snwprintf(szName,
sizeof(szName)/sizeof(szName[0]),
                                        L"{call
%stpcc_orderstatus (?,?,?,?)}", m_szSPPrefix);


                // Create and Prepare a new
command object for OrderStatus.
                CreateCommand(szName,
&m_pIOrderStatusCommand);

                // Describe the consumer buffer by
filling in the array
    // of DBBINDING structures.  Each binding
associates
    // a single parameter to the consumer's buffer.
                InitBindings(&acInputDBBinding[0],
nInputParams, eInputParameter);

                i = 0;
    // OrderStatus parameter 1
                SetBinding(&acInputDBBinding[i++
], offsetof(ORDER_STATUS_DATA, w_id),
sizeof(m_txn.OrderStatus.w_id), DBTYPE_I4);

    // OrderStatus parameter 2
                SetBinding(&acInputDBBinding[i++
], offsetof(ORDER_STATUS_DATA, d_id),
sizeof(m_txn.OrderStatus.d_id), DBTYPE_UI1);

                // OrderStatus parameter 3
                SetBinding(&acInputDBBinding[i++
], offsetof(ORDER_STATUS_DATA, c_id),
sizeof(m_txn.OrderStatus.c_id), DBTYPE_I4);

                // OrderStatus parameter 4
                SetBinding(&acInputDBBinding[i++
], offsetof(ORDER_STATUS_DATA, c_last),
sizeof(m_txn.OrderStatus.c_last), DBTYPE_STR);

                hr = m_pIOrderStatusCommand-
>QueryInterface(IID_IAccessor, (void
**)&pIAccessor);
                if (FAILED(hr))
                {

                ThrowError(m_pIOrderStatusComm
and, COLEDBERR::eQueryInterface,
"InitOrderStatusParams()");
                }

                hr = pIAccessor->CreateAccessor(

DBACCESSOR_PARAMETERDATA,
                        nInputParams,
                        acInputDBBinding,


sizeof(ORDER_STATUS_DATA),


&m_hOrderStatusInputAccessor,
                        acInputDBBindStatus);
                if (FAILED(hr))
                {

                ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"InitOrderStatusParams()");
                }

                m_OrderStatusExecuteParams.cPar
amSets = 1;
                m_OrderStatusExecuteParams.hAcc
essor = m_hOrderStatusInputAccessor;
                m_OrderStatusExecuteParams.pDat
a = &m_txn.OrderStatus;

                // Now fill the binding information
for result set 1 output columns
                InitBindings(&acOutputDBBinding[0
], nOutputParams, eOutputColumn);

                // Binding for a rowset that may
return more than one row.
                // Bind to offsets of the
OL_ORDER_STATUS_DATA structure instead of
ORDER_STATUS_DATA.
                // IRowset::GetData() will be
passed individual array slots OL[i] to fetch the
data
                // from the row set.

                i = 0;
                // OrderStatus output column 1
                SetBinding(&acOutputDBBinding[i+
+], offsetof(OL_ORDER_STATUS_DATA,
ol_supply_w_id),
sizeof(m_txn.OrderStatus.OL[0].ol_supply_w_id),
DBTYPE_I4);
```

```
		// OrderStatus output column 2
		SetBinding(&acOutputDBBinding[i+
+], offsetof(OL_ORDER_STATUS_DATA, ol_i_id),
sizeof(m_txn.OrderStatus.OL[0].ol_i_id),
DBTYPE_I4);

		// OrderStatus output column 3
		SetBinding(&acOutputDBBinding[i+
+], offsetof(OL_ORDER_STATUS_DATA,
ol_quantity),
sizeof(m_txn.OrderStatus.OL[0].ol_quantity),
DBTYPE_I2);

		// OrderStatus output column 4
		SetBinding(&acOutputDBBinding[i+
+], offsetof(OL_ORDER_STATUS_DATA,
ol_amount),
sizeof(m_txn.OrderStatus.OL[0].ol_amount),
DBTYPE_R8);

		// OrderStatus output column 5
		SetBinding(&acOutputDBBinding[i+
+], offsetof(OL_ORDER_STATUS_DATA,
ol_delivery_d),
sizeof(m_txn.OrderStatus.OL[0].ol_delivery_d),
DBTYPE_DBTIMESTAMP);

		hr = pIAccessor->CreateAccessor(
			DBACCESSOR_ROWDATA |
DBACCESSOR_OPTIMIZED,
			nOutputParams,
			acOutputDBBinding,

sizeof(OL_ORDER_STATUS_DATA),

&m_hOrderStatusOutputAccessor,
			acOutputDBBindStatus);
		if (FAILED(hr))
		{

		ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"InitOrderStatusParams()");
		}

		// Now fill the binding information
for result set 2 output columns
		InitBindings(&acOutputDBBinding2[
0], nOutputParams2, eOutputColumn);

		i = 0;
		// OrderStatus output column 1
		SetBinding(&acOutputDBBinding2[i
++], offsetof(ORDER_STATUS_DATA, c_id),
sizeof(m_txn.OrderStatus.c_id), DBTYPE_I4);

		// OrderStatus output column 2
		SetBinding(&acOutputDBBinding2[i
++], offsetof(ORDER_STATUS_DATA, c_last),
sizeof(m_txn.OrderStatus.c_last), DBTYPE_STR);

		// OrderStatus output column 3
		SetBinding(&acOutputDBBinding2[i
++], offsetof(ORDER_STATUS_DATA, c_first),
sizeof(m_txn.OrderStatus.c_first), DBTYPE_STR);

		// OrderStatus output column 4
		SetBinding(&acOutputDBBinding2[i
++], offsetof(ORDER_STATUS_DATA, c_middle),
sizeof(m_txn.OrderStatus.c_middle),
DBTYPE_STR);

		// OrderStatus output column 5
		SetBinding(&acOutputDBBinding2[i
++], offsetof(ORDER_STATUS_DATA,
o_entry_d),
sizeof(m_txn.OrderStatus.o_entry_d),
DBTYPE_DBTIMESTAMP);
		// OrderStatus output column 7
		SetBinding(&acOutputDBBinding2[i
++], offsetof(ORDER_STATUS_DATA,
o_carrier_id),
sizeof(m_txn.OrderStatus.o_carrier_id),
DBTYPE_I2);

		// OrderStatus output column 8
		SetBinding(&acOutputDBBinding2[i
++], offsetof(ORDER_STATUS_DATA,
c_balance), sizeof(m_txn.OrderStatus.c_balance),
DBTYPE_R8);

		// OrderStatus output column 9
		SetBinding(&acOutputDBBinding2[i
++], offsetof(ORDER_STATUS_DATA, o_id),
sizeof(m_txn.OrderStatus.o_id), DBTYPE_I4);

		hr = pIAccessor->CreateAccessor(
			DBACCESSOR_ROWDATA, //
cannot be optimized too because #1 accessor is
			nOutputParams2,
			acOutputDBBinding2,
			sizeof(NEW_ORDER_DATA),

&m_hOrderStatusOutputAccessor2,
			acOutputDBBindStatus2);
		if (FAILED(hr))
		{

		ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"InitOrderStatusParams()");

		}
}

void CTPCC_OLEDB::OrderStatus()
{
		HRESULT
			hr;
		int

		iTryCount = 0;
		IMultipleResults*
		pMultipleResults;
		IRowset*
		pRowset;
		IRowset*
		pRowset2;
		LONG
			cRows =
MAX_OL_ORDER_STATUS_ITEMS;	//
number of rows returned in the 1st rowset
		ULONG
			cRowsObtained;
		HROW

		rghRows[MAX_OL_ORDER_STATUS
_ITEMS];		//returned row
handles for the 1st result set
		HROW*
			prghRows =
&rghRows[0];
		LONG
			cRows2 = 1; //
number of rows returned in the 2nd rowset
		ULONG
			cRowsObtained2;
		HROW
			rghRows2;
		//returned row handle for the 2nd
result set
		HROW*
			prghRows2 =
&rghRows2;
		int
				i;
		long
			lRowsAffected;
		// the number of affected rows for
a rowset

		if (m_txn.OrderStatus.c_id != 0)

		m_txn.OrderStatus.c_last[0] = 0;

		while (TRUE)
		{
			try
			{
				//
Execute the prepared command
				// Ask
for IMultipleResults because it returns 2 rowsets.
				hr =
m_pIOrderStatusCommand->Execute(NULL,
IID_IMultipleResults,
&m_OrderStatusExecuteParams, NULL,



				(IUnknown
**)&pMultipleResults);
				if
(FAILED(hr))

				{

		ThrowError(m_pIOrderStatusComm
and, COLEDBERR::eExecute, "OrderStatus()");
				}


		//////////////////////////
				// Get
order line results

		//////////////////////////



				// Get
the first rowset object
				hr =
pMultipleResults->GetResult(NULL, 0,
IID_IRowset, &lRowsAffected, (IUnknown
**)&pRowset);
				if
(FAILED(hr))
				{

		ThrowError(m_pIOrderStatusComm
and, COLEDBERR::eGetResult, "OrderStatus()");
				}

				// Fetch
the result row handle(s)
				hr =
pRowset->GetNextRows(DB_NULL_HCHAPTER,
0, cRows, &cRowsObtained, &prghRows);
```

```
                                        if
(FAILED(hr))
                                        {

                ThrowError(m_pIOrderStatusComm
and, COLEDBERR::eGetNextRows,
"OrderStatus()");
                                        }


                m_txn.OrderStatus.o_ol_cnt =
(short)cRowsObtained;

                                        // Get
the data from multiple rows in this rowset
                                        for (i =
0; i < m_txn.OrderStatus.o_ol_cnt; ++i)
                                        {

                // Fetch the actual row data by
handle

                hr = pRowset-
>GetData(rghRows[i],
m_hOrderStatusOutputAccessor,
&m_txn.OrderStatus.OL[i]);

                if (FAILED(hr))

                {


                ThrowError(m_pIOrderStatusComm
and, COLEDBERR::eGetData, "OrderStatus()");

                }
                                        }

                                        //
Release row(s)
                                        hr =
pRowset->ReleaseRows(cRowsObtained,
prghRows, NULL, NULL, NULL);
                                        //
Release rowset
                                        hr =
pRowset->Release();


                ////////////////////////////////
                                        // Get
the second rowset object

                ////////////////////////////////
                                        if
(m_txn.OrderStatus.o_ol_cnt > 0)
                                        {

                hr = pMultipleResults-
>GetResult(NULL, 0, IID_IRowset,
&lRowsAffected, (IUnknown **)&pRowset2);

                if (FAILED(hr))

                {


                ThrowError(m_pIOrderStatusComm
and, COLEDBERR::eGetResult, "OrderStatus()");

                }


                // Fetch the result row handle(s)


                hr = pRowset2-
>GetNextRows(DB_NULL_HCHAPTER, 0, cRows2,
&cRowsObtained2, &prghRows2);
                if (FAILED(hr))

                {


                ThrowError(m_pIOrderStatusComm
and, COLEDBERR::eGetNextRows,
"OrderStatus()");

                }


                // Fetch the actual row data by
handle

                hr = pRowset2-
>GetData(rghRows2,
m_hOrderStatusOutputAccessor2,
&m_txn.OrderStatus);

                if (FAILED(hr))

                {


                ThrowError(m_pIOrderStatusComm
and, COLEDBERR::eGetData, "OrderStatus()");

                }


                // Release row(s)

                hr = pRowset2->Release();
                                        }


                                        //
Release the common MultipleResults interface

                                        hr =
pMultipleResults->Release();

                                        if
(m_txn.OrderStatus.o_ol_cnt == 0)

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

                throw new CTPCC_OLEDB_ERR(
CTPCC_OLEDB_ERR::ERR_INVALID_CUST );
                                        else

                m_txn.OrderStatus.exec_status_cod
e = eOK;

                                        break;

                        }
                        catch (COLEDBERR
*e)
                        {
                                        if ((!e-
>m_bDeadLock) || (++iTryCount >
iMaxRetries))

                throw;

                                        // hit
deadlock; backoff for increasingly longer periods
                                        Sleep(10
* iTryCount);
                        }
                }

//              if (iTryCount)
//                      throw new
CTPCC_OLEDB_ERR(CTPCC_OLEDB_ERR::ERR_R
ETRIED_TRANS, iTryCount);
}

void CTPCC_OLEDB::InitDeliveryParams()
{
                int

                i;
                HRESULT
                                        hr;
                wchar_t

                szName[iMAX_SP_NAME_LEN];
                IAccessor*
                        pIAccessor;

    const ULONG
                        nInputParams = 2;
                // input parameters
                const ULONG
                        nOutputParams = 10;
                // output 1st result set columns

                // Structure to bind in accessor
                DBBINDING

                acInputDBBinding[nInputParams];
                DBBINDSTATUS

                acInputDBBindStatus[nInputParams
];
                DBBINDING

                acOutputDBBinding[nOutputParams
];

                DBBINDSTATUS

                acOutputDBBindStatus[nOutputPara
ms];

                // Set command text
                _snwprintf(szName,
sizeof(szName)/sizeof(szName[0]),
                                        L"{call
%stpcc_delivery (?,?)}", m_szSPPrefix);

                // Create and Prepare a new
command object for Delivery.
                CreateCommand(szName,
&m_pIDeliveryCommand);

                // Describe the consumer buffer by
filling in the array
    // of DBBINDING structures.  Each binding
associates
    // a single parameter to the consumer's buffer.
                InitBindings(&acInputDBBinding[0],
nInputParams, eInputParameter);

                i = 0;
    // Delivery parameter 1
```

```
		SetBinding(&acInputDBBinding[i++
], offsetof(DELIVERY_DATA, w_id),
sizeof(m_txn.Delivery.w_id), DBTYPE_I4);

   // Delivery parameter 2
		SetBinding(&acInputDBBinding[i++
], offsetof(DELIVERY_DATA, o_carrier_id),
sizeof(m_txn.Delivery.o_carrier_id), DBTYPE_I2);

		hr = m_pIDeliveryCommand-
>QueryInterface(IID_IAccessor, (void
**)&pIAccessor);
		if (FAILED(hr))
		{

		ThrowError(m_pIDeliveryCommand,
COLEDBERR::eQueryInterface,
"InitDeliveryParams()");
		}

		hr = pIAccessor->CreateAccessor(

DBACCESSOR_PARAMETERDATA,
			nInputParams,
			acInputDBBinding,
			sizeof(DELIVERY_DATA),
			&m_hDeliveryInputAccessor,
			acInputDBBindStatus);
		if (FAILED(hr))
		{

		ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"InitDeliveryParams()");
		}

		m_DeliveryExecuteParams.cParamS
ets = 1;
		m_DeliveryExecuteParams.hAccesso
r = m_hDeliveryInputAccessor;
		m_DeliveryExecuteParams.pData =
&m_txn.Delivery;

		// Now fill the binding information
for result set 1 output columns
		InitBindings(&acOutputDBBinding[0
], nOutputParams, eOutputColumn);

		// Binding for a rowset that may
return more than one row.
		for (i = 0; i < 10; ++i)
		{
			// Delivery output
column 1

		SetBinding(&acOutputDBBinding[i],
offsetof(DELIVERY_DATA, o_id[i]),
sizeof(m_txn.Delivery.o_id[i]), DBTYPE_I4);
		}

		hr = pIAccessor->CreateAccessor(
			DBACCESSOR_ROWDATA |
DBACCESSOR_OPTIMIZED,
			nOutputParams,
			acOutputDBBinding,
			sizeof(DELIVERY_DATA),

&m_hDeliveryOutputAccessor,
			acOutputDBBindStatus);
		if (FAILED(hr))
		{

		ThrowError(pIAccessor,
COLEDBERR::eCreateAccessor,
"InitDeliveryParams()");
}		}

void CTPCC_OLEDB::Delivery()
{
		HRESULT
		hr;
		int
			iTryCount = 0;
		IRowset*
		pRowset;
		LONG
		cRows = 1;   // number of rows
returned in the rowset
		ULONG
		cRowsObtained;
		HROW
		rghRow;
		//returned row handles
		HROW*
		prghRow = &rghRow;

		while (TRUE)
		{
			try
			{
				//
Execute the prepared command
				hr =
m_pIDeliveryCommand->Execute(NULL,
IID_IRowset, &m_DeliveryExecuteParams, NULL,



				(IUnknown
**)&pRowset);
				if
(FAILED(hr))
				{

		ThrowError(m_pIDeliveryCommand,
COLEDBERR::eExecute, "Delivery()");
				}

				// Fetch
the result row handle(s)
				hr =
pRowset->GetNextRows(DB_NULL_HCHAPTER,
0, cRows, &cRowsObtained, &prghRow);

				if
(FAILED(hr))
				{

		ThrowError(m_pIDeliveryCommand,
COLEDBERR::eGetNextRows, "Delivery()");
				}

				// Fetch
the actual row data by handle
				hr =
pRowset->GetData(rghRow,
m_hDeliveryOutputAccessor, &m_txn.Delivery);
				if
(FAILED(hr))
				{

		ThrowError(m_pIDeliveryCommand,
COLEDBERR::eGetData, "Delivery()");
				}

				//
Release row(s)
				hr =
pRowset->ReleaseRows(cRowsObtained,
prghRow, NULL, NULL, NULL);		//
Release rowset
				hr =
pRowset->Release();


		m_txn.Delivery.exec_status_code =
eOK;

				break;
			}
			catch (COLEDBERR
*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_OLEDB_ERR(CTPCC_OLEDB_ERR::ERR_R
ETRIED_TRANS, iTryCount);
}
```

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 structures 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 constructor
__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_out;

        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 );
}
```

\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 COMPONENT_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;};
                        char *ErrorTypeStr() { return "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 CallSetComplete();

// 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(IUnkn
own,
CComObjectRootEx<CComSingleThreadModel>)
	COM_INTERFACE_ENTRY2(IUnkno
wn, ITPCC)
	COM_INTERFACE_ENTRY_CHAIN(C
TPCC_Common)
END_COM_MAP()

};


/////////////////////////////////////////////////////////////////////
// CNewOrder
class CNewOrder :
	public CTPCC_Common,
	public CComCoClass<CNewOrder,
&CLSID_NewOrder>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_NEWOR
DER)

BEGIN_COM_MAP(CNewOrder)
//
	COM_INTERFACE_ENTRY2(IUnkno
wn, CComObjectRootEx)
	COM_INTERFACE_ENTRY2(IUnkno
wn, ITPCC)
	COM_INTERFACE_ENTRY_CHAIN(C
TPCC_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;}
};


	/////////////////////////////////////////
/////////////////////////////////////
// COrderStatus
class COrderStatus :
	public CTPCC_Common,
	public CComCoClass<COrderStatus,
&CLSID_OrderStatus>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_ORDER
STATUS)

BEGIN_COM_MAP(COrderStatus)
//
	COM_INTERFACE_ENTRY2(IUnkno
wn, CComObjectRootEx)
	COM_INTERFACE_ENTRY2(IUnkno
wn, ITPCC)
	COM_INTERFACE_ENTRY_CHAIN(C
TPCC_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;}
};


/////////////////////////////////////////////////////////////////////
// CPayment
class CPayment :
	public CTPCC_Common,
	public CComCoClass<CPayment,
&CLSID_Payment>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_PAYME
NT)

BEGIN_COM_MAP(CPayment)
//
	COM_INTERFACE_ENTRY2(IUnkno
wn, CComObjectRootEx)
	COM_INTERFACE_ENTRY2(IUnkno
wn, ITPCC)
	COM_INTERFACE_ENTRY_CHAIN(C
TPCC_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_STOCKL
EVEL)

BEGIN_COM_MAP(CStockLevel)
//
	COM_INTERFACE_ENTRY2(IUnkno
wn, CComObjectRootEx)
	COM_INTERFACE_ENTRY2(IUnkno
wn, ITPCC)
	COM_INTERFACE_ENTRY_CHAIN(C
TPCC_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_INVOKED
#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 <atlbase.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
definations 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_COMPUT
ERNAME_LENGTH+1];

static  HINSTANCE hLibInstanceDb = NULL;

TYPE_CTPCC_DBLIB
            *pCTPCC_DBLIB_new;
TYPE_CTPCC_ODBC
            *pCTPCC_ODBC_new;

// Critical section to synchronize connection open
and close.
//
CRITICAL_SECTION hConnectCriticalSection;

////////////////////////////////////////////////////
////////////////////
// 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);

            DisableThreadLibraryCalls(hInstanc
e);

                                    DWORD
dwSize = MAX_COMPUTERNAME_LENGTH+1;

            GetComputerName(szMyComputerN
ame, &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, GetLastError() );

            // 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_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
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 );

                                    if
(Reg.dwConnectDelay > 0)
                                    {

            InitializeCriticalSection(&hConnectC
riticalSection);

                                    }

                        }
                        else if (dwReason ==
DLL_PROCESS_DETACH)

            _Module.Term();

            }
```

```
		catch (CBaseErr *e)
		{
			TCHAR szMsg[256];

			_sntprintf(szMsg,
sizeof(szMsg), "%s error, code %d: %s",

		e->ErrorTypeStr(), e->ErrorNum(),
e->ErrorText());

		WriteMessageToEventLog( szMsg );

			delete e;
			return FALSE;
		}
		catch (...)
		{

		WriteMessageToEventLog(TEXT("U
nhandled 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 class 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  hEventSource;
   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_Common()
{
		// Pace connection close for VIA.
		//
		if (Reg.dwConnectDelay > 0)
		{

		EnterCriticalSection(&hConnectCritic
alSection);


		Sleep(Reg.dwConnectDelay);
		}

		if (m_pTxn)

		{

			delete m_pTxn;
		}

		if (Reg.dwConnectDelay > 0)
		{
```

```
		LeaveCriticalSection(&hConnectCriti
calSection);
		}
}

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
		{
			// Pace connection
creation for VIA.
			//
			if
(Reg.dwConnectDelay > 0)
			{

		EnterCriticalSection(&hConnectCritic
alSection);


		Sleep(Reg.dwConnectDelay);
			}

			if (Reg.eDB_Protocol
== ODBC)
				m_pTxn
= pCTPCC_ODBC_new(	Reg.szDbServer,
Reg.szDbUser, Reg.szDbPassword,



		szMyComputerName,
Reg.szDbName,



		Reg.szSPPrefix,
Reg.bCallNoDuplicatesNewOrder );
			else if
(Reg.eDB_Protocol == DBLIB)
				m_pTxn
= pCTPCC_DBLIB_new( Reg.szDbServer,
Reg.szDbUser, Reg.szDbPassword,
szMyComputerName, Reg.szDbName );
			if
(Reg.dwConnectDelay > 0)
			{

		LeaveCriticalSection(&hConnectCriti
calSection);
			}
		}
		catch (CBaseErr *e)
		{
			TCHAR szMsg[256];

			_sntprintf(szMsg,
sizeof(szMsg), "%s error in
CTPCC_Common::Construct, code %d: %s",

		e->ErrorTypeStr(), e->ErrorNum(),
e->ErrorText());

		WriteMessageToEventLog( szMsg );
			delete e;
			return E_FAIL;
		}
		catch (...)
		{

		WriteMessageToEventLog(TEXT("U
nhandled 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 (...)
		{

		WriteMessageToEventLog(TEXT("U
nhandled 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_UI1,

		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() == 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::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 = FALSE;
			return E_FAIL;
		}
}
```

\tpcc com all\src\tpcc com all.def

```
/*		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 <atlbase.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
definations 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_COMPUT
ERNAME_LENGTH+1];

static  HINSTANCE hLibInstanceDb = NULL;

TYPE_CTPCC_DBLIB
            *pCTPCC_DBLIB_new;
TYPE_CTPCC_ODBC
            *pCTPCC_ODBC_new;

// Critical section to synchronize connection open
and close.
//
CRITICAL_SECTION hConnectCriticalSection;

////////////////////////////////////////////////////
////////////////////
// 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);

            DisableThreadLibraryCalls(hInstanc
e);

                                    DWORD
dwSize = MAX_COMPUTERNAME_LENGTH+1;

            GetComputerName(szMyComputerN
ame, &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, GetLastError() );


            // 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_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
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 );

                                    if
(Reg.dwConnectDelay > 0)
                                    {

            InitializeCriticalSection(&hConnectC
riticalSection);
                                    }

                        }
                        else if (dwReason ==
DLL_PROCESS_DETACH)

            _Module.Term();

            }
```

```
		catch (CBaseErr *e)
		{
			TCHAR szMsg[256];

			_sntprintf(szMsg,
sizeof(szMsg), "%s error, code %d: %s",

		e->ErrorTypeStr(), e->ErrorNum(),
e->ErrorText());

		WriteMessageToEventLog( szMsg );

			delete e;
			return FALSE;
		}
		catch (...)
		{

		WriteMessageToEventLog(TEXT("U
nhandled 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 class 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  hEventSource;
   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_Common()
{
		// Pace connection close for VIA.
		//
		if (Reg.dwConnectDelay > 0)
		{

		EnterCriticalSection(&hConnectCritic
alSection);


		Sleep(Reg.dwConnectDelay);
		}

		if (m_pTxn)
		{
			delete m_pTxn;
		}

		if (Reg.dwConnectDelay > 0)
		{
```

```
		LeaveCriticalSection(&hConnectCriti
calSection);
		}
}

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
		{
			// Pace connection
creation for VIA.
			//
			if
(Reg.dwConnectDelay > 0)
			{

		EnterCriticalSection(&hConnectCritic
alSection);


		Sleep(Reg.dwConnectDelay);
			}

			if (Reg.eDB_Protocol
== ODBC)
				m_pTxn
= pCTPCC_ODBC_new(	Reg.szDbServer,
Reg.szDbUser, Reg.szDbPassword,



		szMyComputerName,
Reg.szDbName,



		Reg.szSPPrefix,
Reg.bCallNoDuplicatesNewOrder );
			else if
(Reg.eDB_Protocol == DBLIB)
				m_pTxn
= pCTPCC_DBLIB_new( Reg.szDbServer,
Reg.szDbUser, Reg.szDbPassword,
szMyComputerName, Reg.szDbName );
			if
(Reg.dwConnectDelay > 0)
			{

		LeaveCriticalSection(&hConnectCriti
calSection);
			}
		}
		catch (CBaseErr *e)
		{
			TCHAR szMsg[256];

			_sntprintf(szMsg,
sizeof(szMsg), "%s error in
CTPCC_Common::Construct, code %d: %s",

		e->ErrorTypeStr(), e->ErrorNum(),
e->ErrorText());

		WriteMessageToEventLog( szMsg );
			delete e;
			return E_FAIL;
		}
		catch (...)
		{

		WriteMessageToEventLog(TEXT("U
nhandled 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 (...)
		{

		WriteMessageToEventLog(TEXT("U
nhandled 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_UI1,

		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() == 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::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 = FALSE;
			return E_FAIL;
		}
}
```

\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
6.00.0347 */
/* at Fri Apr 15 14:48:53 2005
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf, W1, Zp8, env=Win32 (32b run)
    protocol : dce , 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 __tpcc_com_all_h__
#define __tpcc_com_all_h__

#if defined(_MSC_VER) && (_MSC_VER >=
1020)
#pragma once
#endif

/* Forward Declarations */

#ifndef __TPCC_FWD_DEFINED__
#define __TPCC_FWD_DEFINED__

#ifdef __cplusplus
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 struct 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 /* __cplusplus */

#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_USER MIDL_user_allocate(size_t);
void __RPC_USER MIDL_user_free( void * );

/* 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_DEFINED__
#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 library (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 DISCARDABLE
"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          REGISTRY
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 file in with the server and any clients
*/


 /* File created by MIDL compiler version
6.00.0347 */
/* at Fri Apr 15 14:48:53 2005
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf, W1, Zp8, env=Win32 (32b run)
    protocol : dce , 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_IA64) && !defined(_M_AMD64)

#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,b
3,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,b
3,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,0x122A3117,0x2520,0x11D3,0xB
A,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);



MIDL_DEFINE_GUID(CLSID,
CLSID_TPCC,0x122A3128,0x2520,0x11D3,0xBA,0
x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_NewOrder,0x975BAABF,0x84A7,0x11D2,0
xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_OrderStatus,0x266836AD,0xA50D,0x11D2
,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_Payment,0xCD02F7EF,0xA4FA,0x11D2,0x
BA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_StockLevel,0x2668369E,0xA50D,0x11D2,0
xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



#endif /* !defined(_M_IA64) &&
!defined(_M_AMD64)*/


#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
6.00.0347 */
/* at Fri Apr 15 14:48:53 2005
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf, W1, Zp8, env=Win64 (32b
run,appending)
    protocol : dce , 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_AMD64)

#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,b
3,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,b
3,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,0x122A3117,0x2520,0x11D3,0xB
A,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_TPCC,0x122A3128,0x2520,0x11D3,0xBA,0
x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_NewOrder,0x975BAABF,0x84A7,0x11D2,0
xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_OrderStatus,0x266836AD,0xA50D,0x11D2
,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_Payment,0xCD02F7EF,0xA4FA,0x11D2,0x
BA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_StockLevel,0x2668369E,0xA50D,0x11D2,0
xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



#endif /* defined(_M_IA64) ||
defined(_M_AMD64)*/
```

\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
{266836AD-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
6.00.0347 */
/* at Fri Apr 15 14:48:43 2005
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf, W1, Zp8, env=Win32 (32b run)
    protocol : dce , 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__

#if defined(_MSC_VER) && (_MSC_VER >=
1020)
#pragma once
#endif

/* 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_USER MIDL_user_allocate(size_t);
void __RPC_USER MIDL_user_free( void * );

/* 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 *txn_out) = 0;

        virtual HRESULT __stdcall Payment(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out) = 0;

        virtual HRESULT __stdcall Delivery(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out) = 0;

        virtual HRESULT __stdcall StockLevel(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out) = 0;

        virtual HRESULT __stdcall OrderStatus(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out) = 0;

        virtual HRESULT __stdcall CallSetComplete(
void) = 0;

    };

#else           /* C style interface */

    typedef struct ITPCCVtbl
    {
        BEGIN_INTERFACE

        HRESULT ( STDMETHODCALLTYPE
*QueryInterface )(
            ITPCC * This,
            /* [in] */ REFIID riid,
            /* [iid_is][out] */ void **ppvObject);

        ULONG ( STDMETHODCALLTYPE *AddRef
)(
            ITPCC * This);

        ULONG ( STDMETHODCALLTYPE *Release
)(
            ITPCC * This);

        HRESULT ( __stdcall *NewOrder )(
            ITPCC * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out);

        HRESULT ( __stdcall *Payment )(
            ITPCC * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out);

        HRESULT ( __stdcall *Delivery )(
            ITPCC * This,

            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out);

        HRESULT ( __stdcall *StockLevel )(
            ITPCC * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out);

        HRESULT ( __stdcall *OrderStatus )(
            ITPCC * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out);

        HRESULT ( __stdcall *CallSetComplete )(
            ITPCC * This);

        END_INTERFACE
    } ITPCCVtbl;

    interface ITPCC
    {
        CONST_VTBL struct ITPCCVtbl *lpVtbl;
    };


#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(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 * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT *txn_out);


void __RPC_STUB ITPCC_NewOrder_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Payment_Proxy(
    ITPCC * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT *txn_out);


void __RPC_STUB ITPCC_Payment_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Delivery_Proxy(
    ITPCC * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT *txn_out);


void __RPC_STUB ITPCC_Delivery_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_StockLevel_Proxy(
    ITPCC * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT *txn_out);


void __RPC_STUB ITPCC_StockLevel_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_OrderStatus_Proxy(
    ITPCC * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT *txn_out);


void __RPC_STUB ITPCC_OrderStatus_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_CallSetComplete_Proxy(
    ITPCC * This);


void __RPC_STUB ITPCC_CallSetComplete_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);



#endif          /*
__ITPCC_INTERFACE_DEFINED__ */


/* Additional Prototypes for ALL interfaces */

unsigned long             __RPC_USER
VARIANT_UserSize(     unsigned long *, unsigned
long            , VARIANT * );
unsigned char * __RPC_USER
VARIANT_UserMarshal(  unsigned long *,
unsigned char *, VARIANT * );
unsigned char * __RPC_USER
VARIANT_UserUnmarshal(unsigned long *,
unsigned char *, VARIANT * );
void                      __RPC_USER
VARIANT_UserFree(     unsigned long *,
VARIANT * );

/* 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
{2668369E-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\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 reconstruct 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 by MIDL compiler version
6.00.0347 */
/* at Fri Apr 15 14:48:43 2005
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf, W1, Zp8, env=Win32 (32b run)
    protocol : dce , 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__

#if defined(_MSC_VER) && (_MSC_VER >=
1020)
#pragma once
#endif

/* 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"

#ifdef __cplusplus
extern "C"{
#endif

void * __RPC_USER MIDL_user_allocate(size_t);
void __RPC_USER MIDL_user_free( void * );

/* 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 *txn_out) = 0;

        virtual HRESULT __stdcall Payment(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out) = 0;

        virtual HRESULT __stdcall Delivery(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out) = 0;

        virtual HRESULT __stdcall StockLevel(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out) = 0;

        virtual HRESULT __stdcall OrderStatus(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out) = 0;

        virtual HRESULT __stdcall CallSetComplete(
void) = 0;

    };

#else           /* C style interface */

    typedef struct ITPCCVtbl
    {
        BEGIN_INTERFACE

        HRESULT ( STDMETHODCALLTYPE
*QueryInterface )(
            ITPCC * This,
            /* [in] */ REFIID riid,
            /* [iid_is][out] */ void **ppvObject);

        ULONG ( STDMETHODCALLTYPE *AddRef
)(
            ITPCC * This);

        ULONG ( STDMETHODCALLTYPE *Release
)(
            ITPCC * This);

        HRESULT ( __stdcall *NewOrder )(
            ITPCC * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out);


        HRESULT ( __stdcall *Payment )(
            ITPCC * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out);

        HRESULT ( __stdcall *Delivery )(
            ITPCC * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out);

        HRESULT ( __stdcall *StockLevel )(
            ITPCC * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out);

        HRESULT ( __stdcall *OrderStatus )(
            ITPCC * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT *txn_out);

        HRESULT ( __stdcall *CallSetComplete )(
            ITPCC * This);

        END_INTERFACE
    } ITPCCVtbl;

    interface ITPCC
    {
        CONST_VTBL struct ITPCCVtbl *lpVtbl;
    };


#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(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 * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT *txn_out);


void __RPC_STUB ITPCC_NewOrder_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Payment_Proxy(
    ITPCC * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT *txn_out);


void __RPC_STUB ITPCC_Payment_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Delivery_Proxy(
    ITPCC * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT *txn_out);


void __RPC_STUB ITPCC_Delivery_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_StockLevel_Proxy(
    ITPCC * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT *txn_out);


void __RPC_STUB ITPCC_StockLevel_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_OrderStatus_Proxy(
    ITPCC * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT *txn_out);


void __RPC_STUB ITPCC_OrderStatus_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall
ITPCC_CallSetComplete_Proxy(
    ITPCC * This);


void __RPC_STUB ITPCC_CallSetComplete_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);



#endif          /*
__ITPCC_INTERFACE_DEFINED__ */


/* Additional Prototypes for ALL interfaces */

unsigned long             __RPC_USER
VARIANT_UserSize(     unsigned long *, unsigned
long            , VARIANT * );
unsigned char * __RPC_USER
VARIANT_UserMarshal(  unsigned long *,
unsigned char *, VARIANT * );
unsigned char * __RPC_USER
VARIANT_UserUnmarshal(unsigned long *,
unsigned char *, VARIANT * );
void                      __RPC_USER
VARIANT_UserFree(     unsigned long *,
VARIANT * );

/* 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 and CLSIDs */

/* link this file in with the server and any clients
*/


 /* File created by MIDL compiler version
6.00.0347 */
/* at Fri Apr 15 14:48:43 2005
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf, W1, Zp8, env=Win32 (32b run)
    protocol : dce , 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_IA64) && !defined(_M_AMD64)

#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,b
3,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,b
3,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,0x
47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



#endif /* !defined(_M_IA64) &&
!defined(_M_AMD64)*/


#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
6.00.0347 */
/* at Fri Apr 15 14:48:43 2005
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf, W1, Zp8, env=Win64 (32b
run,appending)
    protocol : dce , 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_AMD64)

#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,b
3,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,b
3,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,0x
47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



#endif /* defined(_M_IA64) ||
defined(_M_AMD64)*/
```

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 6.00.0347 */
/* at Fri Apr 15 14:48:43 2005
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf, W1, Zp8, env=Win32 (32b run)
    protocol : dce , 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_IA64) && !defined(_M_AMD64)
#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   1023
#define PROC_FORMAT_STRING_SIZE   193
#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;


static RPC_SYNTAX_IDENTIFIER  _RpcTransferSyntax =
{0x8A885D04,0x1CEB,0x11C9,{0x9F,0xE8,0x08,0x00,0x2B,0x10,0x48,0x60}},{2,0}};


extern const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;


extern const MIDL_STUB_DESC Object_StubDesc;


extern const MIDL_SERVER_INFO ITPCC_ServerInfo;
extern const MIDL_STUBLESS_PROXY_INFO ITPCC_ProxyInfo;


extern const USER_MARSHAL_ROUTINE_QUADRUPLE UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ];

#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_STUB_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 */
/*  8 */    NdrFcShort( 0x1c ),         /* x86 Stack size/offset = 28 */
/* 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, */
/* 18 */    NdrFcShort( 0x4 ),          /* x86 Stack size/offset = 4 */
/* 20 */    NdrFcShort( 0x3e2 ),        /* Type Offset=994 */
                    /* Parameter txn_out */

/* 22 */    NdrFcShort( 0x4113 ),       /* Flags: must size, must free, out, simple ref, srv alloc size=16 */
/* 24 */    NdrFcShort( 0x14 ),         /* x86 Stack size/offset = 20 */
/* 26 */    NdrFcShort( 0x3f4 ),        /* Type Offset=1012 */

                    /* Return value */

/* 28 */    NdrFcShort( 0x70 ),         /* Flags: out, return, base type, */
/* 30 */    NdrFcShort( 0x18 ),         /* x86 Stack size/offset = 24 */
/* 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 */
/* 42 */    NdrFcShort( 0x1c ),         /* x86 Stack size/offset = 28 */
/* 44 */    NdrFcShort( 0x0 ),          /* 0 */
/* 46 */    NdrFcShort( 0x8 ),          /* 8 */
/* 48 */    0x7,                        /* Oi2 Flags:  srv must size, clt must size, has return, */
                                                0x3,
                                /* 3 */

                    /* Parameter txn_in */

/* 50 */    NdrFcShort( 0x8b ),         /* Flags: must size, must free, in, by val, */
/* 52 */    NdrFcShort( 0x4 ),          /* x86 Stack size/offset = 4 */
/* 54 */    NdrFcShort( 0x3e2 ),        /* Type Offset=994 */

                    /* Parameter txn_out */

/* 56 */    NdrFcShort( 0x4113 ),       /* Flags: must size, must free, out, simple ref, srv alloc size=16 */
/* 58 */    NdrFcShort( 0x14 ),         /* x86 Stack size/offset = 20 */
/* 60 */    NdrFcShort( 0x3f4 ),        /* Type Offset=1012 */

                    /* Return value */

/* 62 */    NdrFcShort( 0x70 ),         /* Flags: out, return, base type, */
/* 64 */    NdrFcShort( 0x18 ),         /* x86 Stack size/offset = 24 */
/* 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 */
/* 76 */      NdrFcShort( 0x1c ),   /* x86
Stack size/offset = 28 */
/* 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, */
/* 86 */      NdrFcShort( 0x4 ),    /* x86
Stack size/offset = 4 */
/* 88 */      NdrFcShort( 0x3e2 ),  /* Type
Offset=994 */

            /* Parameter txn_out */

/* 90 */      NdrFcShort( 0x4113 ), /* Flags:
must size, must free, out, simple ref, srv alloc
size=16 */
/* 92 */      NdrFcShort( 0x14 ),   /* x86
Stack size/offset = 20 */
/* 94 */      NdrFcShort( 0x3f4 ),  /* Type
Offset=1012 */

            /* Return value */

/* 96 */      NdrFcShort( 0x70 ),   /* Flags:
out, return, base type, */
/* 98 */      NdrFcShort( 0x18 ),   /* x86
Stack size/offset = 24 */
/* 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 */
/* 110 */     NdrFcShort( 0x1c ),   /* x86
Stack size/offset = 28 */
/* 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, */
/* 120 */     NdrFcShort( 0x4 ),    /* x86
Stack size/offset = 4 */
/* 122 */     NdrFcShort( 0x3e2 ),  /* Type
Offset=994 */

            /* Parameter txn_out */

/* 124 */     NdrFcShort( 0x4113 ), /* Flags:
must size, must free, out, simple ref, srv alloc
size=16 */
/* 126 */     NdrFcShort( 0x14 ),   /* x86
Stack size/offset = 20 */
/* 128 */     NdrFcShort( 0x3f4 ),  /* Type
Offset=1012 */

            /* Return value */

/* 130 */     NdrFcShort( 0x70 ),   /* Flags:
out, return, base type, */
/* 132 */     NdrFcShort( 0x18 ),   /* x86
Stack size/offset = 24 */
/* 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 */
/* 144 */     NdrFcShort( 0x1c ),   /* x86
Stack size/offset = 28 */
/* 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, */
/* 154 */     NdrFcShort( 0x4 ),    /* x86
Stack size/offset = 4 */
/* 156 */     NdrFcShort( 0x3e2 ),  /* Type
Offset=994 */

            /* Parameter txn_out */

/* 158 */     NdrFcShort( 0x4113 ), /* Flags:
must size, must free, out, simple ref, srv alloc
size=16 */
/* 160 */     NdrFcShort( 0x14 ),   /* x86
Stack size/offset = 20 */
/* 162 */     NdrFcShort( 0x3f4 ),  /* Type
Offset=1012 */

            /* Return value */

/* 164 */     NdrFcShort( 0x70 ),   /* Flags:
out, return, base type, */
/* 166 */     NdrFcShort( 0x18 ),   /* x86
Stack size/offset = 24 */
/* 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 */
/* 178 */     NdrFcShort( 0x8 ),    /* x86
Stack size/offset = 8 */
/* 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, */
/* 188 */     NdrFcShort( 0x4 ),    /* x86
Stack size/offset = 4 */
/* 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( 0x3ca ),  /*
Offset= 970 (974) */
/*  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( 0x2f ),   /* 47 */
/* 18 */      NdrFcLong( 0x14 ),    /* 20 */
/* 22 */      NdrFcShort( 0x800b ), /*
Simple arm type: FC_HYPER */
/* 24 */      NdrFcLong( 0x3 ),     /* 3 */
/* 28 */      NdrFcShort( 0x8008 ), /*
Simple arm type: FC_LONG */
/* 30 */      NdrFcLong( 0x11 ),    /* 17 */
/* 34 */      NdrFcShort( 0x8001 ), /*
Simple arm type: FC_BYTE */
/* 36 */      NdrFcLong( 0x2 ),     /* 2 */
/* 40 */      NdrFcShort( 0x8006 ), /*
Simple arm type: FC_SHORT */
/* 42 */      NdrFcLong( 0x4 ),     /* 4 */
/* 46 */      NdrFcShort( 0x800a ), /*
Simple arm type: FC_FLOAT */
/* 48 */      NdrFcLong( 0x5 ),     /* 5 */
/* 52 */      NdrFcShort( 0x800c ), /*
Simple arm type: FC_DOUBLE */
/* 54 */      NdrFcLong( 0xb ),     /* 11 */
/* 58 */      NdrFcShort( 0x8006 ), /*
Simple arm type: FC_SHORT */
/* 60 */      NdrFcLong( 0xa ),     /* 10 */
```

```
/* 64 */        NdrFcShort( 0x8008 ),       /*
Simple arm type: FC_LONG */
/* 66 */        NdrFcLong( 0x6 ),           /* 6 */
/* 70 */        NdrFcShort( 0xe8 ),         /*
Offset= 232 (302) */
/* 72 */        NdrFcLong( 0x7 ),           /* 7 */
/* 76 */        NdrFcShort( 0x800c ),       /*
Simple arm type: FC_DOUBLE */
/* 78 */        NdrFcLong( 0x8 ),           /* 8 */
/* 82 */        NdrFcShort( 0xe2 ),         /*
Offset= 226 (308) */
/* 84 */        NdrFcLong( 0xd ),           /* 13 */
/* 88 */        NdrFcShort( 0xf4 ),         /*
Offset= 244 (332) */
/* 90 */        NdrFcLong( 0x9 ),           /* 9 */
/* 94 */        NdrFcShort( 0x100 ),        /*
Offset= 256 (350) */
/* 96 */        NdrFcLong( 0x2000 ),        /* 8192
*/
/* 100 */       NdrFcShort( 0x10c ),        /*
Offset= 268 (368) */
/* 102 */       NdrFcLong( 0x24 ),          /* 36 */
/* 106 */       NdrFcShort( 0x31a ),        /*
Offset= 794 (900) */
/* 108 */       NdrFcLong( 0x4024 ),        /* 16420
*/
/* 112 */       NdrFcShort( 0x314 ),        /*
Offset= 788 (900) */
/* 114 */       NdrFcLong( 0x4011 ),        /* 16401
*/
/* 118 */       NdrFcShort( 0x312 ),        /*
Offset= 786 (904) */
/* 120 */       NdrFcLong( 0x4002 ),        /* 16386
*/
/* 124 */       NdrFcShort( 0x310 ),        /*
Offset= 784 (908) */
/* 126 */       NdrFcLong( 0x4003 ),        /* 16387
*/
/* 130 */       NdrFcShort( 0x30e ),        /*
Offset= 782 (912) */
/* 132 */       NdrFcLong( 0x4014 ),        /* 16404
*/
/* 136 */       NdrFcShort( 0x30c ),        /*
Offset= 780 (916) */
/* 138 */       NdrFcLong( 0x4004 ),        /* 16388
*/
/* 142 */       NdrFcShort( 0x30a ),        /*
Offset= 778 (920) */
/* 144 */       NdrFcLong( 0x4005 ),        /* 16389
*/
/* 148 */       NdrFcShort( 0x308 ),        /*
Offset= 776 (924) */
/* 150 */       NdrFcLong( 0x400b ),        /* 16395
*/
/* 154 */       NdrFcShort( 0x2f2 ),        /*
Offset= 754 (908) */
/* 156 */       NdrFcLong( 0x400a ),        /* 16394
*/
/* 160 */       NdrFcShort( 0x2f0 ),        /*
Offset= 752 (912) */
/* 162 */       NdrFcLong( 0x4006 ),        /* 16390
*/
/* 166 */       NdrFcShort( 0x2fa ),        /*
Offset= 762 (928) */
/* 168 */       NdrFcLong( 0x4007 ),        /* 16391
*/
/* 172 */       NdrFcShort( 0x2f0 ),        /*
Offset= 752 (924) */
/* 174 */       NdrFcLong( 0x4008 ),        /* 16392
*/
/* 178 */       NdrFcShort( 0x2f2 ),        /*
Offset= 754 (932) */
/* 180 */       NdrFcLong( 0x400d ),        /* 16397
*/
/* 184 */       NdrFcShort( 0x2f0 ),        /*
Offset= 752 (936) */
/* 186 */       NdrFcLong( 0x4009 ),        /* 16393
*/
/* 190 */       NdrFcShort( 0x2ee ),        /*
Offset= 750 (940) */
/* 192 */       NdrFcLong( 0x6000 ),        /* 24576
*/
/* 196 */       NdrFcShort( 0x2ec ),        /*
Offset= 748 (944) */
/* 198 */       NdrFcLong( 0x400c ),        /* 16396
*/
/* 202 */       NdrFcShort( 0x2ea ),        /*
Offset= 746 (948) */
/* 204 */       NdrFcLong( 0x10 ),          /* 16 */
/* 208 */       NdrFcShort( 0x8002 ),       /*
Simple arm type: FC_CHAR */
/* 210 */       NdrFcLong( 0x12 ),          /* 18 */
/* 214 */       NdrFcShort( 0x8006 ),       /*
Simple arm type: FC_SHORT */
/* 216 */       NdrFcLong( 0x13 ),          /* 19 */
/* 220 */       NdrFcShort( 0x8008 ),       /*
Simple arm type: FC_LONG */
/* 222 */       NdrFcLong( 0x15 ),          /* 21 */
/* 226 */       NdrFcShort( 0x800b ),       /*
Simple arm type: FC_HYPER */
/* 228 */       NdrFcLong( 0x16 ),          /* 22 */
/* 232 */       NdrFcShort( 0x8008 ),       /*
Simple arm type: FC_LONG */
/* 234 */       NdrFcLong( 0x17 ),          /* 23 */
/* 238 */       NdrFcShort( 0x8008 ),       /*
Simple arm type: FC_LONG */
/* 240 */       NdrFcLong( 0xe ),           /* 14 */
/* 244 */       NdrFcShort( 0x2c8 ),        /*
Offset= 712 (956) */
/* 246 */       NdrFcLong( 0x400e ),        /* 16398
*/
/* 250 */       NdrFcShort( 0x2cc ),        /*
Offset= 716 (966) */
/* 252 */       NdrFcLong( 0x4010 ),        /* 16400
*/
/* 256 */       NdrFcShort( 0x2ca ),        /*
Offset= 714 (970) */
/* 258 */       NdrFcLong( 0x4012 ),        /* 16402
*/
/* 262 */       NdrFcShort( 0x286 ),        /*
Offset= 646 (908) */
/* 264 */       NdrFcLong( 0x4013 ),        /* 16403
*/
/* 268 */       NdrFcShort( 0x284 ),        /*
Offset= 644 (912) */
/* 270 */       NdrFcLong( 0x4015 ),        /* 16405
*/
/* 274 */       NdrFcShort( 0x282 ),        /*
Offset= 642 (916) */
/* 276 */       NdrFcLong( 0x4016 ),        /* 16406
*/
/* 280 */       NdrFcShort( 0x278 ),        /*
Offset= 632 (912) */
/* 282 */       NdrFcLong( 0x4017 ),        /* 16407
*/
/* 286 */       NdrFcShort( 0x272 ),        /*
Offset= 626 (912) */
/* 288 */       NdrFcLong( 0x0 ),           /* 0 */
/* 292 */       NdrFcShort( 0x0 ),          /*
Offset= 0 (292) */
/* 294 */       NdrFcLong( 0x1 ),           /* 1 */
/* 298 */       NdrFcShort( 0x0 ),          /*
Offset= 0 (298) */
/* 300 */       NdrFcShort( 0xffffffff ),   /*
Offset= -1 (299) */
/* 302 */
                                            0x15,
                        /* FC_STRUCT */
                                            0x7,
                        /* 7 */
/* 304 */       NdrFcShort( 0x8 ),          /* 8 */
/* 306 */       0xb,
FC_HYPER */
                                            0x5b,
                        /* FC_END */
/* 308 */
                                            0x12,
0x0,            /* FC_UP */
/* 310 */       NdrFcShort( 0xc ),          /*
Offset= 12 (322) */
/* 312 */
                                            0x1b,
                        /* FC_CARRAY */
                                            0x1,
                        /* 1 */
/* 314 */       NdrFcShort( 0x2 ),          /* 2 */
/* 316 */       0x9,                        /* Corr
desc: FC_ULONG */
                                            0x0,
                        /*  */
/* 318 */       NdrFcShort( 0xfffc ),       /* -4 */
/* 320 */       0x6,                        /*
FC_SHORT */
                                            0x5b,
                        /* FC_END */

/* 322 */
                                            0x17,
                        /* FC_CSTRUCT */
                                            0x3,
                        /* 3 */
/* 324 */       NdrFcShort( 0x8 ),          /* 8 */
/* 326 */       NdrFcShort( 0xfffffff2 ),   /*
Offset= -14 (312) */
/* 328 */       0x8,                        /*
FC_LONG */
                                            0x8,
                        /* FC_LONG */
/* 330 */       0x5c,                       /*
FC_PAD */
                                            0x5b,
                        /* FC_END */
/* 332 */
                                            0x2f,
                        /* FC_IP */
                                            0x5a,
                        /* FC_CONSTANT_IID
*/
/* 334 */       NdrFcLong( 0x0 ),           /* 0 */
/* 338 */       NdrFcShort( 0x0 ),          /* 0 */
/* 340 */       NdrFcShort( 0x0 ),          /* 0 */
/* 342 */       0xc0,                       /* 192
*/
                                            0x0,
                        /* 0 */
/* 344 */       0x0,                        /* 0 */
                                            0x0,
                        /* 0 */
/* 346 */       0x0,                        /* 0 */
                                            0x0,
                        /* 0 */
/* 348 */       0x0,                        /* 0 */
                                            0x46,
                        /* 70 */
/* 350 */
                                            0x2f,
                        /* FC_IP */
                                            0x5a,
                        /* FC_CONSTANT_IID
*/
/* 352 */       NdrFcLong( 0x20400 ),       /*
132096 */
/* 356 */       NdrFcShort( 0x0 ),          /* 0 */
/* 358 */       NdrFcShort( 0x0 ),          /* 0 */
```

```
/* 360 */      0xc0,                       /* 192
*/
                                           0x0,
                           /* 0 */
/* 362 */      0x0,                        /* 0 */
                                           0x0,
                           /* 0 */
/* 364 */      0x0,                        /* 0 */
                                           0x0,
                           /* 0 */
/* 366 */      0x0,                        /* 0 */
                                           0x46,
                           /* 70 */
/* 368 */
                                           0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 370 */      NdrFcShort( 0x2 ),          /*
Offset= 2 (372) */
/* 372 */
                                           0x12,
0x0,           /* FC_UP */
/* 374 */      NdrFcShort( 0x1fc ),        /*
Offset= 508 (882) */
/* 376 */
                                           0x2a,
                           /*
FC_ENCAPSULATED_UNION */
                                           0x49,
                           /* 73 */
/* 378 */      NdrFcShort( 0x18 ),         /* 24 */
/* 380 */      NdrFcShort( 0xa ),          /* 10 */
/* 382 */      NdrFcLong( 0x8 ),           /* 8 */
/* 386 */      NdrFcShort( 0x58 ),         /*
Offset= 88 (474) */
/* 388 */      NdrFcLong( 0xd ),           /* 13 */
/* 392 */      NdrFcShort( 0x78 ),         /*
Offset= 120 (512) */
/* 394 */      NdrFcLong( 0x9 ),           /* 9 */
/* 398 */      NdrFcShort( 0x94 ),         /*
Offset= 148 (546) */
/* 400 */      NdrFcLong( 0xc ),           /* 12 */
/* 404 */      NdrFcShort( 0xbc ),         /*
Offset= 188 (592) */
/* 406 */      NdrFcLong( 0x24 ),          /* 36 */
/* 410 */      NdrFcShort( 0x114 ),        /*
Offset= 276 (686) */
/* 412 */      NdrFcLong( 0x800d ),        /* 32781
*/
/* 416 */      NdrFcShort( 0x130 ),        /*
Offset= 304 (720) */
/* 418 */      NdrFcLong( 0x10 ),          /* 16 */
/* 422 */      NdrFcShort( 0x148 ),        /*
Offset= 328 (750) */
/* 424 */      NdrFcLong( 0x2 ),           /* 2 */
/* 428 */      NdrFcShort( 0x160 ),        /*
Offset= 352 (780) */
/* 430 */      NdrFcLong( 0x3 ),           /* 3 */
/* 434 */      NdrFcShort( 0x178 ),        /*
Offset= 376 (810) */
/* 436 */      NdrFcLong( 0x14 ),          /* 20 */
/* 440 */      NdrFcShort( 0x190 ),        /*
Offset= 400 (840) */
/* 442 */      NdrFcShort( 0xffffffff ),   /*
Offset= -1 (441) */
/* 444 */
                                           0x1b,
                           /* FC_CARRAY */
                                           0x3,
                           /* 3 */
/* 446 */      NdrFcShort( 0x4 ),          /* 4 */
/* 448 */      0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                           0x0,
                           /*  */
/* 450 */      NdrFcShort( 0x0 ),          /* 0 */
/* 452 */                                  0x4b,
                           /* FC_PP */
                                           0x5c,
                           /* FC_PAD */
/* 454 */
                                           0x48,
                           /*
FC_VARIABLE_REPEAT */
                                           0x49,
                           /* FC_FIXED_OFFSET
*/
/* 456 */      NdrFcShort( 0x4 ),          /* 4 */
/* 458 */      NdrFcShort( 0x0 ),          /* 0 */
/* 460 */      NdrFcShort( 0x1 ),          /* 1 */
/* 462 */      NdrFcShort( 0x0 ),          /* 0 */
/* 464 */      NdrFcShort( 0x0 ),          /* 0 */
/* 466 */      0x12, 0x0,    /* FC_UP */
/* 468 */      NdrFcShort( 0xffffff6e ),   /*
Offset= -146 (322) */
/* 470 */
                                           0x5b,
                           /* FC_END */


                                           0x8,
                           /* FC_LONG */
/* 472 */      0x5c,                       /*
FC_PAD */
                                           0x5b,
                           /* FC_END */
/* 474 */
                                           0x16,
                           /* FC_PSTRUCT */
                                           0x3,
                           /* 3 */
/* 476 */      NdrFcShort( 0x8 ),          /* 8 */
/* 478 */
                                           0x4b,
                           /* FC_PP */
                                           0x5c,
                           /* FC_PAD */
/* 480 */
                                           0x46,
                           /* FC_NO_REPEAT */
                                           0x5c,
                           /* FC_PAD */
/* 482 */      NdrFcShort( 0x4 ),          /* 4 */
/* 484 */      NdrFcShort( 0x4 ),          /* 4 */
/* 486 */      0x11, 0x0,    /* FC_RP */
/* 488 */      NdrFcShort( 0xffffffd4 ),   /*
Offset= -44 (444) */
/* 490 */
                                           0x5b,
                           /* FC_END */


                                           0x8,
                           /* FC_LONG */
/* 492 */      0x8,                        /*
FC_LONG */
                                           0x5b,
                           /* FC_END */
/* 494 */
                                           0x21,
                           /* FC_BOGUS_ARRAY
*/
                                           0x3,
                           /* 3 */
/* 496 */      NdrFcShort( 0x0 ),          /* 0 */
/* 498 */      0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                           0x0,
                           /*  */
/* 500 */      NdrFcShort( 0x0 ),          /* 0 */
/* 502 */      NdrFcLong( 0xffffffff ),    /* -1 */
/* 506 */      0x4c,                       /*
FC_EMBEDDED_COMPLEX */
                                           0x0,
/* 508 */      NdrFcShort( 0xffffff50 ),   /*
Offset= -176 (332) */
/* 510 */      0x5c,                       /*
FC_PAD */
                                           0x5b,
                           /* FC_END */
/* 512 */
                                           0x1a,
                           /*
FC_BOGUS_STRUCT */
                                           0x3,
                           /* 3 */
/* 514 */      NdrFcShort( 0x8 ),          /* 8 */
/* 516 */      NdrFcShort( 0x0 ),          /* 0 */
/* 518 */      NdrFcShort( 0x6 ),          /*
Offset= 6 (524) */
/* 520 */      0x8,                        /*
FC_LONG */
                                           0x36,
                           /* FC_POINTER */
/* 522 */      0x5c,                       /*
FC_PAD */
                                           0x5b,
                           /* FC_END */

/* 524 */
                                           0x11,
0x0,           /* FC_RP */
/* 526 */      NdrFcShort( 0xfffffffe0 ),  /*
Offset= -32 (494) */
/* 528 */
                                           0x21,
                           /* FC_BOGUS_ARRAY
*/
                                           0x3,
                           /* 3 */
/* 530 */      NdrFcShort( 0x0 ),          /* 0 */
/* 532 */      0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                           0x0,
                           /*  */
/* 534 */      NdrFcShort( 0x0 ),          /* 0 */
/* 536 */      NdrFcLong( 0xffffffff ),    /* -1 */
/* 540 */      0x4c,                       /*
FC_EMBEDDED_COMPLEX */
                                           0x0,
                           /* 0 */
/* 542 */      NdrFcShort( 0xffffff40 ),   /*
Offset= -192 (350) */
/* 544 */      0x5c,                       /*
FC_PAD */
                                           0x5b,
                           /* FC_END */
/* 546 */
                                           0x1a,
                           /*
FC_BOGUS_STRUCT */
                                           0x3,
                           /* 3 */
/* 548 */      NdrFcShort( 0x8 ),          /* 8 */
/* 550 */      NdrFcShort( 0x0 ),          /* 0 */
/* 552 */      NdrFcShort( 0x6 ),          /*
Offset= 6 (558) */
/* 554 */      0x8,                        /*
FC_LONG */
                                           0x36,
                           /* FC_POINTER */
/* 556 */      0x5c,                       /*
FC_PAD */
                                           0x5b,
                           /* FC_END */
/* 558 */
```

```
                                0x11,
0x0,            /* FC_RP */
/* 560 */       NdrFcShort( 0xfffffff0 ),   /*
Offset= -32 (528) */
/* 562 */
                                0x1b,
                        /* FC_CARRAY */
                                0x3,
                        /* 3 */
/* 564 */       NdrFcShort( 0x4 ),          /* 4 */
/* 566 */       0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                0x0,
                        /*  */
/* 568 */       NdrFcShort( 0x0 ),          /* 0 */
/* 570 */
                                0x4b,
                        /* FC_PP */
                                0x5c,
                        /* FC_PAD */
/* 572 */
                                0x48,
                        /*
FC_VARIABLE_REPEAT */
                                0x49,
                        /* FC_FIXED_OFFSET
*/
/* 574 */       NdrFcShort( 0x4 ),          /* 4 */
/* 576 */       NdrFcShort( 0x0 ),          /* 0 */
/* 578 */       NdrFcShort( 0x1 ),          /* 1 */
/* 580 */       NdrFcShort( 0x0 ),          /* 0 */
/* 582 */       NdrFcShort( 0x0 ),          /* 0 */
/* 584 */       0x12, 0x0,    /* FC_UP */
/* 586 */       NdrFcShort( 0x184 ),        /*
Offset= 388 (974) */
/* 588 */
                                0x5b,
                        /* FC_END */


                                0x8,
                        /* FC_LONG */
/* 590 */       0x5c,                       /*
FC_PAD */
                                0x5b,
                        /* FC_END */
/* 592 */
                                0x1a,
                        /*
FC_BOGUS_STRUCT */
                                0x3,
                        /* 3 */
/* 594 */       NdrFcShort( 0x8 ),          /* 8 */
/* 596 */       NdrFcShort( 0x0 ),          /* 0 */
/* 598 */       NdrFcShort( 0x6 ),          /*
Offset= 6 (604) */
/* 600 */       0x8,                        /*
FC_LONG */
                                0x36,
                        /* FC_POINTER */
/* 602 */       0x5c,                       /*
FC_PAD */
                                0x5b,
                        /* FC_END */
/* 604 */
                                0x11,
0x0,            /* FC_RP */
/* 606 */       NdrFcShort( 0xffffffd4 ),   /*
Offset= -44 (562) */
/* 608 */
                                0x2f,
                        /* FC_IP */
                                0x5a,
                        /* FC_CONSTANT_IID
*/
/* 610 */       NdrFcLong( 0x2f ),          /* 47 */
/* 614 */       NdrFcShort( 0x0 ),          /* 0 */
/* 616 */       NdrFcShort( 0x0 ),          /* 0 */
/* 618 */       0xc0,                       /* 192
*/
                                0x0,
                        /* 0 */
/* 620 */       0x0,                        /* 0 */
                                0x0,
                        /* 0 */
/* 622 */       0x0,                        /* 0 */
                                0x0,
                        /* 0 */
/* 624 */       0x0,                        /* 0 */
                                0x46,
                        /* 70 */
/* 626 */
                                0x1b,
                        /* FC_CARRAY */
                                0x0,
                        /* 0 */
/* 628 */       NdrFcShort( 0x1 ),          /* 1 */
/* 630 */       0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                0x0,
                        /*  */
/* 632 */       NdrFcShort( 0x4 ),          /* 4 */
/* 634 */       0x1,                        /*
FC_BYTE */
                                0x5b,
                        /* FC_END */
/* 636 */
                                0x1a,
                        /*
FC_BOGUS_STRUCT */
                                0x3,
                        /* 3 */
/* 638 */       NdrFcShort( 0x10 ),         /* 16 */
/* 640 */       NdrFcShort( 0x0 ),          /* 0 */
/* 642 */       NdrFcShort( 0xa ),          /*
Offset= 10 (652) */
/* 644 */       0x8,                        /*
FC_LONG */
                                0x8,
                        /* FC_LONG */
/* 646 */       0x4c,                       /*
FC_EMBEDDED_COMPLEX */
                                0x0,
                        /* 0 */
/* 648 */       NdrFcShort( 0xffffffd8 ),   /*
Offset= -40 (608) */
/* 650 */       0x36,                       /*
FC_POINTER */
                                0x5b,
                        /* FC_END */
/* 652 */
                                0x12,
0x0,            /* FC_UP */
/* 654 */       NdrFcShort( 0xffffffe4 ),   /*
Offset= -28 (626) */
/* 656 */
                                0x1b,
                        /* FC_CARRAY */
                                0x3,
                        /* 3 */
/* 658 */       NdrFcShort( 0x4 ),          /* 4 */
/* 660 */       0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                0x0,
                        /*  */
/* 662 */       NdrFcShort( 0x0 ),          /* 0 */
/* 664 */
                                0x4b,
                        /* FC_PP */
                                0x5c,
                        /* FC_PAD */
/* 666 */
                                0x48,
                        /*
FC_VARIABLE_REPEAT */
                                0x49,
                        /* FC_FIXED_OFFSET
*/
/* 668 */       NdrFcShort( 0x4 ),          /* 4 */
/* 670 */       NdrFcShort( 0x0 ),          /* 0 */
/* 672 */       NdrFcShort( 0x1 ),          /* 1 */
/* 674 */       NdrFcShort( 0x0 ),          /* 0 */
/* 676 */       NdrFcShort( 0x0 ),          /* 0 */
/* 678 */       0x12, 0x0,    /* FC_UP */
/* 680 */       NdrFcShort( 0xffffffd4 ),   /*
Offset= -44 (636) */
/* 682 */
                                0x5b,
                        /* FC_END */


                                0x8,
                        /* FC_LONG */
/* 684 */       0x5c,                       /*
FC_PAD */
                                0x5b,
                        /* FC_END */
/* 686 */
                                0x1a,
                        /*
FC_BOGUS_STRUCT */


                                0x3,
                        /* 3 */
/* 688 */       NdrFcShort( 0x8 ),          /* 8 */
/* 690 */       NdrFcShort( 0x0 ),          /* 0 */
/* 692 */       NdrFcShort( 0x6 ),          /*
Offset= 6 (698) */
/* 694 */       0x8,                        /*
FC_LONG */
                                0x36,
                        /* FC_POINTER */
/* 696 */       0x5c,                       /*
FC_PAD */
                                0x5b,
                        /* FC_END */
/* 698 */
                                0x11,
0x0,            /* FC_RP */
/* 700 */       NdrFcShort( 0xffffffd4 ),   /*
Offset= -44 (656) */
/* 702 */
                                0x1d,
                        /* FC_SMFARRAY */
                                0x0,
                        /* 0 */
/* 704 */       NdrFcShort( 0x8 ),          /* 8 */
/* 706 */       0x1,                        /*
FC_BYTE */
                                0x5b,
                        /* FC_END */
/* 708 */
                                0x15,
                        /* FC_STRUCT */
                                0x3,
                        /* 3 */
/* 710 */       NdrFcShort( 0x10 ),         /* 16 */
/* 712 */       0x8,                        /*
FC_LONG */
                                0x6,
                        /* FC_SHORT */
/* 714 */       0x6,                        /*
FC_SHORT */
                                0x4c,
                        /*
FC_EMBEDDED_COMPLEX */
/* 716 */       0x0,                        /* 0 */
```

```
            NdrFcShort( 0xffffffff1 ),    /*
Offset= -15 (702) */
                                          0x5b,
                                /* FC_END */
/* 720 */
                                          0x1a,
                                /*
FC_BOGUS_STRUCT */
                                          0x3,
                                /* 3 */
/* 722 */     NdrFcShort( 0x18 ),         /* 24 */
/* 724 */     NdrFcShort( 0x0 ),          /* 0 */
/* 726 */     NdrFcShort( 0xa ),          /*
Offset= 10 (736) */
/* 728 */     0x8,                        /*
FC_LONG */
                                          0x36,
                                /* FC_POINTER */
/* 730 */     0x4c,                       /*
FC_EMBEDDED_COMPLEX */
                                          0x0,
                                /* 0 */
/* 732 */     NdrFcShort( 0xfffffff8 ),   /*
Offset= -24 (708) */
/* 734 */     0x5c,                       /*
FC_PAD */
                                          0x5b,
                                /* FC_END */
/* 736 */
                                          0x11,
0x0,          /* FC_RP */
/* 738 */     NdrFcShort( 0xffffff0c ),   /*
Offset= -244 (494) */
/* 740 */
                                          0x1b,
                                /* FC_CARRAY */
                                          0x0,
                                /* 0 */
/* 742 */     NdrFcShort( 0x1 ),          /* 1 */
/* 744 */     0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                          0x0,
                                /*  */
/* 746 */     NdrFcShort( 0x0 ),          /* 0 */
/* 748 */     0x1,                        /*
FC_BYTE */
                                          0x5b,
                                /* FC_END */
/* 750 */
                                          0x16,
                                /* FC_PSTRUCT */
                                          0x3,
                                /* 3 */
/* 752 */     NdrFcShort( 0x8 ),          /* 8 */
/* 754 */
                                          0x4b,
                                /* FC_PP */
                                          0x5c,
                                /* FC_PAD */
/* 756 */
                                          0x46,
                                /* FC_NO_REPEAT */
                                          0x5c,
                                /* FC_PAD */
/* 758 */     NdrFcShort( 0x4 ),          /* 4 */
/* 760 */     NdrFcShort( 0x4 ),          /* 4 */
/* 762 */     0x12, 0x0,    /* FC_UP */
/* 764 */     NdrFcShort( 0xfffffff8 ),   /*
Offset= -24 (740) */
/* 766 */
                                          0x5b,
                                /* FC_END */
                                          0x8,
/* 768 */     0x8,          /* FC_LONG */
FC_LONG */
                                          0x5b,
                                /* FC_END */
/* 770 */
                                          0x1b,
                                /* FC_CARRAY */
                                          0x1,
                                /* 1 */
/* 772 */     NdrFcShort( 0x2 ),          /* 2 */
/* 774 */     0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                          0x0,
                                /*  */
/* 776 */     NdrFcShort( 0x0 ),          /* 0 */
/* 778 */     0x6,                        /*
FC_SHORT */
                                          0x5b,
                                /* FC_END */
/* 780 */
                                          0x16,
                                /* FC_PSTRUCT */
                                          0x3,
                                /* 3 */
/* 782 */     NdrFcShort( 0x8 ),          /* 8 */
/* 784 */
                                          0x4b,
                                /* FC_PP */
                                          0x5c,
                                /* FC_PAD */
/* 786 */
                                          0x46,
                                /* FC_NO_REPEAT */
                                          0x5c,
                                /* FC_PAD */
/* 788 */     NdrFcShort( 0x4 ),          /* 4 */
/* 790 */     NdrFcShort( 0x4 ),          /* 4 */
/* 792 */     0x12, 0x0,    /* FC_UP */
/* 794 */     NdrFcShort( 0xfffffff8 ),   /*
Offset= -24 (770) */
/* 796 */
                                          0x5b,
                                /* FC_END */

                                          0x8,
                                /* FC_LONG */
/* 798 */     0x8,                        /*
FC_LONG */
                                          0x5b,
                                /* FC_END */
/* 800 */
                                          0x1b,
                                /* FC_CARRAY */
                                          0x3,
                                /* 3 */
/* 802 */     NdrFcShort( 0x4 ),          /* 4 */
/* 804 */     0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                          0x0,
                                /*  */
/* 806 */     NdrFcShort( 0x0 ),          /* 0 */
/* 808 */     0x8,                        /*
FC_LONG */
                                          0x5b,
                                /* FC_END */
/* 810 */
                                          0x16,
                                /* FC_PSTRUCT */
                                          0x3,
                                /* 3 */
/* 812 */     NdrFcShort( 0x8 ),          /* 8 */
/* 814 */
                                          0x4b,
                                /* FC_PP */
                                          0x5c,
/* 816 */               /* FC_PAD */
                                          0x46,
                                /* FC_NO_REPEAT */
                                          0x5c,
                                /* FC_PAD */
/* 818 */     NdrFcShort( 0x4 ),          /* 4 */
/* 820 */     NdrFcShort( 0x4 ),          /* 4 */
/* 822 */     0x12, 0x0,    /* FC_UP */
/* 824 */     NdrFcShort( 0xfffffff8 ),   /*
Offset= -24 (800) */
/* 826 */
                                          0x5b,
                                /* FC_END */

                                          0x8,
                                /* FC_LONG */
/* 828 */     0x8,                        /*
FC_LONG */
                                          0x5b,
                                /* FC_END */
/* 830 */
                                          0x1b,
                                /* FC_CARRAY */
                                          0x7,
                                /* 7 */
/* 832 */     NdrFcShort( 0x8 ),          /* 8 */
/* 834 */     0x19,                       /* Corr
desc:  field pointer, FC_ULONG */

                                          0x0,
                                /*  */
/* 836 */     NdrFcShort( 0x0 ),          /* 0 */
/* 838 */     0xb,                        /*
FC_HYPER */
                                          0x5b,
                                /* FC_END */
/* 840 */
                                          0x16,
                                /* FC_PSTRUCT */
                                          0x3,
                                /* 3 */
/* 842 */     NdrFcShort( 0x8 ),          /* 8 */
/* 844 */
                                          0x4b,
                                /* FC_PP */
                                          0x5c,
                                /* FC_PAD */
/* 846 */
                                          0x46,
                                /* FC_NO_REPEAT */
                                          0x5c,
                                /* FC_PAD */
/* 848 */     NdrFcShort( 0x4 ),          /* 4 */
/* 850 */     NdrFcShort( 0x4 ),          /* 4 */
/* 852 */     0x12, 0x0,    /* FC_UP */
/* 854 */     NdrFcShort( 0xfffffff8 ),   /*
Offset= -24 (830) */
/* 856 */
                                          0x5b,
                                /* FC_END */

                                          0x8,
                                /* FC_LONG */
/* 858 */     0x8,                        /*
FC_LONG */
                                          0x5b,
                                /* FC_END */
/* 860 */
                                          0x15,
                                /* FC_STRUCT */
                                          0x3,
                                /* 3 */
/* 862 */     NdrFcShort( 0x8 ),          /* 8 */
```

```
/* 864 */      0x8,                        /*
FC_LONG */
                                           0x8,
                           /* FC_LONG */
/* 866 */      0x5c,                       /*
FC_PAD */
                                           0x5b,
                           /* FC_END */
/* 868 */
                                           0x1b,
                           /* FC_CARRAY */
                                           0x3,
                           /* 3 */
/* 870 */      NdrFcShort( 0x8 ),          /* 8 */
/* 872 */      0x7,                        /* Corr
desc: FC_USHORT */
                                           0x0,
                           /*  */
/* 874 */      NdrFcShort( 0xffd8 ),       /* -40 */
/* 876 */      0x4c,                       /*
FC_EMBEDDED_COMPLEX */
                                           0x0,
                           /* 0 */
/* 878 */      NdrFcShort( 0xfffffffe ),   /*
Offset= -18 (860) */
/* 880 */      0x5c,                       /*
FC_PAD */
                                           0x5b,
                           /* FC_END */
/* 882 */
                                           0x1a,
                           /*
FC_BOGUS_STRUCT */
                                           0x3,
                           /* 3 */
/* 884 */      NdrFcShort( 0x28 ),         /* 40 */
/* 886 */      NdrFcShort( 0xfffffffe ),   /*
Offset= -18 (868) */
/* 888 */      NdrFcShort( 0x0 ),          /*
Offset= 0 (888) */
/* 890 */      0x6,                        /*
FC_SHORT */
                                           0x6,
                           /* FC_SHORT */
/* 892 */      0x8,                        /*
FC_LONG */
                                           0x8,
                           /* FC_LONG */
/* 894 */      0x4c,                       /*
FC_EMBEDDED_COMPLEX */
                                           0x0,
                           /* 0 */
/* 896 */      NdrFcShort( 0xfffffdf8 ),   /*
Offset= -520 (376) */
/* 898 */      0x5c,                       /*
FC_PAD */
                                           0x5b,
                           /* FC_END */
/* 900 */
                                           0x12,
0x0,           /* FC_UP */
/* 902 */      NdrFcShort( 0xfffffef6 ),   /*
Offset= -266 (636) */
/* 904 */
                                           0x12,
0x8,           /* FC_UP [simple_pointer] */
/* 906 */      0x1,                        /*
FC_BYTE */
                                           0x5c,
                           /* FC_PAD */
/* 908 */
                                           0x12,
0x8,           /* FC_UP [simple_pointer] */
/* 910 */      0x6,                        /*
FC_SHORT */
                                           0x5c,
/* 912 */                  /* FC_PAD */
                                           0x12,
0x8,           /* FC_UP [simple_pointer] */
/* 914 */      0x8,                        /*
FC_LONG */
                                           0x5c,
                           /* FC_PAD */
/* 916 */
                                           0x12,
0x8,           /* FC_UP [simple_pointer] */
/* 918 */      0xb,                        /*
FC_HYPER */
                                           0x5c,
                           /* FC_PAD */
/* 920 */
                                           0x12,
0x8,           /* FC_UP [simple_pointer] */
/* 922 */      0xa,                        /*
FC_FLOAT */
                                           0x5c,
                           /* FC_PAD */
/* 924 */
                                           0x12,
0x8,           /* FC_UP [simple_pointer] */
/* 926 */      0xc,                        /*
FC_DOUBLE */
                                           0x5c,
                           /* FC_PAD */
/* 928 */
                                           0x12,
0x0,           /* FC_UP */
/* 930 */      NdrFcShort( 0xfffffd8c ),   /*
Offset= -628 (302) */
/* 932 */
                                           0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 934 */      NdrFcShort( 0xfffffd8e ),   /*
Offset= -626 (308) */
/* 936 */
                                           0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 938 */      NdrFcShort( 0xfffffda2 ),   /*
Offset= -606 (332) */
/* 940 */
                                           0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 942 */      NdrFcShort( 0xfffffdb0 ),   /*
Offset= -592 (350) */
/* 944 */
                                           0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 946 */      NdrFcShort( 0xfffffdbe ),   /*
Offset= -578 (368) */
/* 948 */
                                           0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 950 */      NdrFcShort( 0x2 ),          /*
Offset= 2 (952) */
/* 952 */
                                           0x12,
0x0,           /* FC_UP */
/* 954 */      NdrFcShort( 0x14 ),         /*
Offset= 20 (974) */
/* 956 */
                                           0x15,
                           /* FC_STRUCT */
                                           0x7,
                           /* 7 */
/* 958 */      NdrFcShort( 0x10 ),         /* 16 */
/* 960 */      0x6,                        /*
FC_SHORT */
                                           0x1,
                           /* FC_BYTE */
/* 962 */      0x1,                        /*
FC_BYTE */
                                           0x8,
                           /* FC_LONG */
/* 964 */      0xb,                        /*
FC_HYPER */
                                           0x5b,
                           /* FC_END */
/* 966 */
                                           0x12,
0x0,           /* FC_UP */
/* 968 */      NdrFcShort( 0xffffffd4 ),   /*
Offset= -12 (956) */
/* 970 */
                                           0x12,
0x8,           /* FC_UP [simple_pointer] */
/* 972 */      0x2,                        /*
FC_CHAR */
                                           0x5c,
                           /* FC_PAD */
/* 974 */
                                           0x1a,
                           /*
FC_BOGUS_STRUCT */
                                           0x7,
                           /* 7 */
/* 976 */      NdrFcShort( 0x20 ),         /* 32 */
/* 978 */      NdrFcShort( 0x0 ),          /* 0 */
/* 980 */      NdrFcShort( 0x0 ),          /*
Offset= 0 (980) */
/* 982 */      0x8,                        /*
FC_LONG */
                                           0x8,
                           /* FC_LONG */
/* 984 */      0x6,                        /*
FC_SHORT */
                                           0x6,
                           /* FC_SHORT */
/* 986 */      0x6,                        /*
FC_SHORT */
                                           0x6,
                           /* FC_SHORT */
/* 988 */      0x4c,                       /*
FC_EMBEDDED_COMPLEX */
                                           0x0,
                           /* 0 */
/* 990 */      NdrFcShort( 0xffffffc28 ),  /*
Offset= -984 (6) */
/* 992 */      0x5c,                       /*
FC_PAD */
                                           0x5b,
                           /* FC_END */
/* 994 */      0xb4,                       /*
FC_USER_MARSHAL */
                                           0x83,
                           /* 131 */
/* 996 */      NdrFcShort( 0x0 ),          /* 0 */
/* 998 */      NdrFcShort( 0x10 ),         /* 16 */
/* 1000 */     NdrFcShort( 0x0 ),          /* 0 */
/* 1002 */     NdrFcShort( 0xffffffc18 ),  /*
Offset= -1000 (2) */
/* 1004 */
                                           0x11,
0x4,           /* FC_RP [alloced_on_stack] */
/* 1006 */     NdrFcShort( 0x6 ),          /*
Offset= 6 (1012) */
/* 1008 */
                                           0x13,
0x0,           /* FC_OP */
/* 1010 */     NdrFcShort( 0xffffffdc ),   /*
Offset= -36 (974) */
/* 1012 */     0xb4,                       /*
FC_USER_MARSHAL */
```

```
                                        0x83,
                        /* 131 */
/* 1014 */    NdrFcShort( 0x0 ),        /* 0 */
/* 1016 */    NdrFcShort( 0x10 ),       /* 16 */
/* 1018 */    NdrFcShort( 0x0 ),        /* 0 */
/* 1020 */    NdrFcShort( 0xffffffff4 ),    /*
Offset= -12 (1008) */

                                        0x0
        }
    };

static const
USER_MARSHAL_ROUTINE_QUADRUPLE
UserMarshalRoutines[
WIRE_MARSHAL_TABLE_SIZE ] =
        {

            {
            VARIANT_UserSize
            ,VARIANT_UserMarshal
            ,VARIANT_UserUnmarshal
            ,VARIANT_UserFree
            }

        };



/* Standard interface:
__MIDL_itf_tpcc_com_ps_0000, ver. 0.0,

GUID={0x00000000,0x0000,0x0000,{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}} */

#pragma code_seg(".orpc")
static const unsigned short
ITPCC_FormatStringOffsetTable[] =
    {
    0,
    34,
    68,
    102,
    136,
    170
    };

static const MIDL_STUBLESS_PROXY_INFO
ITPCC_ProxyInfo =
    {
    &Object_StubDesc,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0
    };


static const MIDL_SERVER_INFO
ITPCC_ServerInfo =
    {
    &Object_StubDesc,
    0, MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0,
    0};
CINTERFACE_PROXY_VTABLE(9)
_ITPCCProxyVtbl =
{
    &ITPCC_ProxyInfo,
    &IID_ITPCC,
    IUnknown_QueryInterface_Proxy,
    IUnknown_AddRef_Proxy,
    IUnknown_Release_Proxy ,
    (void *) (INT_PTR) -1 /* ITPCC::NewOrder */
,
    (void *) (INT_PTR) -1 /* ITPCC::Payment */ ,
    (void *) (INT_PTR) -1 /* ITPCC::Delivery */ ,
    (void *) (INT_PTR) -1 /* ITPCC::StockLevel */
,
    (void *) (INT_PTR) -1 /* ITPCC::OrderStatus
*/ ,
    (void *) (INT_PTR) -1 /*
ITPCC::CallSetComplete */
};

const CInterfaceStubVtbl _ITPCCStubVtbl =
{
    &IID_ITPCC,
    &ITPCC_ServerInfo,
    9,
    0, /* pure interpreted */
    CStdStubBuffer_METHODS
};

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,
    0x600015b, /* MIDL Version 6.0.347 */
    0,
    UserMarshalRoutines,
    0,  /* notify & notify_flag routine table */
    0x1, /* MIDL flag */
    0, /* cs routines */
    0,   /* proxy/server info */
    0   /* Reserved5 */
    };

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_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_IA64) &&
!defined(_M_AMD64)*/


#pragma warning( disable: 4049 )  /* more than
64k source lines */

/* this ALWAYS GENERATED file contains the
proxy stub code */


 /* File created by MIDL compiler version
6.00.0347 */
/* at Fri Apr 15 14:48:43 2005
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf, W1, Zp8, env=Win64 (32b
run,appending)
    protocol : dce , 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_AMD64)
```

```
#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__
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   1003
#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;


static RPC_SYNTAX_IDENTIFIER
_RpcTransferSyntax =
{{0x8A885D04,0x1CEB,0x11C9,{0x9F,0xE8,0x08,
0x00,0x2B,0x10,0x48,0x60}},{2,0}};


extern const MIDL_TYPE_FORMAT_STRING
__MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING
__MIDL_ProcFormatString;


extern const MIDL_STUB_DESC
Object_StubDesc;


extern const MIDL_SERVER_INFO
ITPCC_ServerInfo;
extern const MIDL_STUBLESS_PROXY_INFO
ITPCC_ProxyInfo;


extern const
USER_MARSHAL_ROUTINE_QUADRUPLE
UserMarshalRoutines[
WIRE_MARSHAL_TABLE_SIZE ];

#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 */
/*  8 */    NdrFcShort( 0x30 ),     /* ia64
Stack size/offset = 48 */
/* 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 */

            /* Parameter txn_in */

/* 26 */    NdrFcShort( 0x8b ),     /* Flags:
must size, must free, in, by val, */
/* 28 */    NdrFcShort( 0x8 ),      /* ia64
Stack size/offset = 8 */
/* 30 */    NdrFcShort( 0x3ce ),    /* Type
Offset=974 */

            /* Parameter txn_out */

/* 32 */    NdrFcShort( 0x6113 ),   /* Flags:
must size, must free, out, simple ref, srv alloc
size=24 */
/* 34 */    NdrFcShort( 0x20 ),     /* ia64
Stack size/offset = 32 */
/* 36 */    NdrFcShort( 0x3e0 ),    /* Type
Offset=992 */

            /* Return value */

/* 38 */    NdrFcShort( 0x70 ),     /* Flags:
out, return, base type, */
/* 40 */    NdrFcShort( 0x28 ),     /* ia64
Stack size/offset = 40 */
/* 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 */
/* 52 */    NdrFcShort( 0x30 ),     /* ia64
Stack size/offset = 48 */
/* 54 */    NdrFcShort( 0x0 ),      /* 0 */
/* 56 */    NdrFcShort( 0x8 ),      /* 8 */
/* 58 */    0x47,                   /* Oi2
Flags:  srv must size, clt must size, has return,
has ext, */
                                    0x3,
/* 60 */    0xa,            /* 3 */ /* 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, */
/* 72 */    NdrFcShort( 0x8 ),      /* ia64
Stack size/offset = 8 */
/* 74 */    NdrFcShort( 0x3ce ),    /* Type
Offset=974 */

            /* Parameter txn_out */

/* 76 */    NdrFcShort( 0x6113 ),   /* Flags:
must size, must free, out, simple ref, srv alloc
size=24 */
/* 78 */    NdrFcShort( 0x20 ),     /* ia64
Stack size/offset = 32 */
/* 80 */    NdrFcShort( 0x3e0 ),    /* Type
Offset=992 */

            /* Return value */

/* 82 */    NdrFcShort( 0x70 ),     /* Flags:
out, return, base type, */
/* 84 */    NdrFcShort( 0x28 ),     /* ia64
Stack size/offset = 40 */

/* 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 */
/* 96 */    NdrFcShort( 0x30 ),     /* ia64
Stack size/offset = 48 */
/* 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, */
/* 116 */   NdrFcShort( 0x8 ),      /* ia64
Stack size/offset = 8 */
```

```
/* 118 */      NdrFcShort( 0x3ce ),        /* Type
Offset=974 */

                /* Parameter txn_out */

/* 120 */      NdrFcShort( 0x6113 ),       /* Flags:
must size, must free, out, simple ref, srv alloc
size=24 */
/* 122 */      NdrFcShort( 0x20 ),         /* ia64
Stack size/offset = 32 */
/* 124 */      NdrFcShort( 0x3e0 ),        /* Type
Offset=992 */

                /* Return value */

/* 126 */      NdrFcShort( 0x70 ),         /* Flags:
out, return, base type, */
/* 128 */      NdrFcShort( 0x28 ),         /* ia64
Stack size/offset = 40 */
/* 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 */
/* 140 */      NdrFcShort( 0x30 ),         /* ia64
Stack size/offset = 48 */
/* 142 */      NdrFcShort( 0x0 ),          /* 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, */
/* 160 */      NdrFcShort( 0x8 ),          /* ia64
Stack size/offset = 8 */
/* 162 */      NdrFcShort( 0x3ce ),        /* Type
Offset=974 */

                /* Parameter txn_out */

/* 164 */      NdrFcShort( 0x6113 ),       /* Flags:
must size, must free, out, simple ref, srv alloc
size=24 */
/* 166 */      NdrFcShort( 0x20 ),         /* ia64
Stack size/offset = 32 */
/* 168 */      NdrFcShort( 0x3e0 ),        /* Type
Offset=992 */

                /* Return value */

/* 170 */      NdrFcShort( 0x70 ),         /* Flags:
out, return, base type, */
/* 172 */      NdrFcShort( 0x28 ),         /* ia64
Stack size/offset = 40 */
/* 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 */
/* 184 */      NdrFcShort( 0x30 ),         /* ia64
Stack size/offset = 48 */
/* 186 */      NdrFcShort( 0x0 ),          /* 0 */
/* 188 */      NdrFcShort( 0x8 ),          /* 8 */
/* 190 */      0x47,                       /* Oi2
Flags:  srv must size, clt must 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, */
/* 204 */      NdrFcShort( 0x8 ),          /* ia64
Stack size/offset = 8 */
/* 206 */      NdrFcShort( 0x3ce ),        /* Type
Offset=974 */

                /* Parameter txn_out */

/* 208 */      NdrFcShort( 0x6113 ),       /* Flags:
must size, must free, out, simple ref, srv alloc
size=24 */
/* 210 */      NdrFcShort( 0x20 ),         /* ia64
Stack size/offset = 32 */
/* 212 */      NdrFcShort( 0x3e0 ),        /* Type
Offset=992 */

                /* Return value */

/* 214 */      NdrFcShort( 0x70 ),         /* Flags:
out, return, base type, */
/* 216 */      NdrFcShort( 0x28 ),         /* ia64
Stack size/offset = 40 */
/* 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
Stack size/offset = 16 */
/* 230 */      NdrFcShort( 0x0 ),          /* 0 */
/* 232 */      NdrFcShort( 0x8 ),          /* 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
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( 0x3b6 ),        /*
Offset= 950 (954) */
/*  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( 0x2f ),         /* 47 */
/* 20 */       NdrFcLong( 0x14 ),          /* 20 */
/* 24 */       NdrFcShort( 0x800b ),       /*
Simple arm type: FC_HYPER */
/* 26 */       NdrFcLong( 0x3 ),           /* 3 */
/* 30 */       NdrFcShort( 0x8008 ),       /*
Simple arm type: FC_LONG */
/* 32 */       NdrFcLong( 0x11 ),          /* 17 */
/* 36 */       NdrFcShort( 0x8001 ),       /*
Simple arm type: FC_BYTE */
/* 38 */       NdrFcLong( 0x2 ),           /* 2 */
/* 42 */       NdrFcShort( 0x8006 ),       /*
Simple arm type: FC_SHORT */
/* 44 */       NdrFcLong( 0x4 ),           /* 4 */
/* 48 */       NdrFcShort( 0x800a ),       /*
Simple arm type: FC_FLOAT */
/* 50 */       NdrFcLong( 0x5 ),           /* 5 */
```

```
/* 54 */      NdrFcShort( 0x800c ),     /*
Simple arm type: FC_DOUBLE */
/* 56 */      NdrFcLong( 0xb ),         /* 11 */
/* 60 */      NdrFcShort( 0x8006 ),     /*
Simple arm type: FC_SHORT */
/* 62 */      NdrFcLong( 0xa ),         /* 10 */
/* 66 */      NdrFcShort( 0x8008 ),     /*
Simple arm type: FC_LONG */
/* 68 */      NdrFcLong( 0x6 ),         /* 6 */
/* 72 */      NdrFcShort( 0xe8 ),       /*
Offset= 232 (304) */
/* 74 */      NdrFcLong( 0x7 ),         /* 7 */
/* 78 */      NdrFcShort( 0x800c ),     /*
Simple arm type: FC_DOUBLE */
/* 80 */      NdrFcLong( 0x8 ),         /* 8 */
/* 84 */      NdrFcShort( 0xe2 ),       /*
Offset= 226 (310) */
/* 86 */      NdrFcLong( 0xd ),         /* 13 */
/* 90 */      NdrFcShort( 0xf6 ),       /*
Offset= 246 (336) */
/* 92 */      NdrFcLong( 0x9 ),         /* 9 */
/* 96 */      NdrFcShort( 0x102 ),      /*
Offset= 258 (354) */
/* 98 */      NdrFcLong( 0x2000 ),      /* 8192
*/
/* 102 */     NdrFcShort( 0x10e ),      /*
Offset= 270 (372) */
/* 104 */     NdrFcLong( 0x24 ),        /* 36 */
/* 108 */     NdrFcShort( 0x304 ),      /*
Offset= 772 (880) */
/* 110 */     NdrFcLong( 0x4024 ),      /* 16420
*/
/* 114 */     NdrFcShort( 0x2fe ),      /*
Offset= 766 (880) */
/* 116 */     NdrFcLong( 0x4011 ),      /* 16401
*/
/* 120 */     NdrFcShort( 0x2fc ),      /*
Offset= 764 (884) */
/* 122 */     NdrFcLong( 0x4002 ),      /* 16386
*/
/* 126 */     NdrFcShort( 0x2fa ),      /*
Offset= 762 (888) */
/* 128 */     NdrFcLong( 0x4003 ),      /* 16387
*/
/* 132 */     NdrFcShort( 0x2f8 ),      /*
Offset= 760 (892) */
/* 134 */     NdrFcLong( 0x4014 ),      /* 16404
*/
/* 138 */     NdrFcShort( 0x2f6 ),      /*
Offset= 758 (896) */
/* 140 */     NdrFcLong( 0x4004 ),      /* 16388
*/
/* 144 */     NdrFcShort( 0x2f4 ),      /*
Offset= 756 (900) */
/* 146 */     NdrFcLong( 0x4005 ),      /* 16389
*/
/* 150 */     NdrFcShort( 0x2f2 ),      /*
Offset= 754 (904) */
/* 152 */     NdrFcLong( 0x400b ),      /* 16395
*/
/* 156 */     NdrFcShort( 0x2dc ),      /*
Offset= 732 (888) */
/* 158 */     NdrFcLong( 0x400a ),      /* 16394
*/
/* 162 */     NdrFcShort( 0x2da ),      /*
Offset= 730 (892) */
/* 164 */     NdrFcLong( 0x4006 ),      /* 16390
*/
/* 168 */     NdrFcShort( 0x2e4 ),      /*
Offset= 740 (908) */
/* 170 */     NdrFcLong( 0x4007 ),      /* 16391
*/
/* 174 */     NdrFcShort( 0x2da ),      /*
Offset= 730 (904) */
/* 176 */     NdrFcLong( 0x4008 ),      /* 16392
*/
/* 180 */     NdrFcShort( 0x2dc ),      /*
Offset= 732 (912) */
/* 182 */     NdrFcLong( 0x400d ),      /* 16397
*/
/* 186 */     NdrFcShort( 0x2da ),      /*
Offset= 730 (916) */
/* 188 */     NdrFcLong( 0x4009 ),      /* 16393
*/
/* 192 */     NdrFcShort( 0x2d8 ),      /*
Offset= 728 (920) */
/* 194 */     NdrFcLong( 0x6000 ),      /* 24576
*/
/* 198 */     NdrFcShort( 0x2d6 ),      /*
Offset= 726 (924) */
/* 200 */     NdrFcLong( 0x400c ),      /* 16396
*/
/* 204 */     NdrFcShort( 0x2d4 ),      /*
Offset= 724 (928) */
/* 206 */     NdrFcLong( 0x10 ),        /* 16 */
/* 210 */     NdrFcShort( 0x8002 ),     /*
Simple arm type: FC_CHAR */
/* 212 */     NdrFcLong( 0x12 ),        /* 18 */
/* 216 */     NdrFcShort( 0x8006 ),     /*
Simple arm type: FC_SHORT */
/* 218 */     NdrFcLong( 0x13 ),        /* 19 */
/* 222 */     NdrFcShort( 0x8008 ),     /*
Simple arm type: FC_LONG */
/* 224 */     NdrFcLong( 0x15 ),        /* 21 */
/* 228 */     NdrFcShort( 0x800b ),     /*
Simple arm type: FC_HYPER */
/* 230 */     NdrFcLong( 0x16 ),        /* 22 */
/* 234 */     NdrFcShort( 0x8008 ),     /*
Simple arm type: FC_LONG */
/* 236 */     NdrFcLong( 0x17 ),        /* 23 */
/* 240 */     NdrFcShort( 0x8008 ),     /*
Simple arm type: FC_LONG */
/* 242 */     NdrFcLong( 0xe ),         /* 14 */
/* 246 */     NdrFcShort( 0x2b2 ),      /*
Offset= 690 (936) */
/* 248 */     NdrFcLong( 0x400e ),      /* 16398
*/
/* 252 */     NdrFcShort( 0x2b6 ),      /*
Offset= 694 (946) */
/* 254 */     NdrFcLong( 0x4010 ),      /* 16400
*/
/* 258 */     NdrFcShort( 0x2b4 ),      /*
Offset= 692 (950) */
/* 260 */     NdrFcLong( 0x4012 ),      /* 16402
*/
/* 264 */     NdrFcShort( 0x270 ),      /*
Offset= 624 (888) */
/* 266 */     NdrFcLong( 0x4013 ),      /* 16403
*/
/* 270 */     NdrFcShort( 0x26e ),      /*
Offset= 622 (892) */
/* 272 */     NdrFcLong( 0x4015 ),      /* 16405
*/
/* 276 */     NdrFcShort( 0x26c ),      /*
Offset= 620 (896) */
/* 278 */     NdrFcLong( 0x4016 ),      /* 16406
*/
/* 282 */     NdrFcShort( 0x262 ),      /*
Offset= 610 (892) */
/* 284 */     NdrFcLong( 0x4017 ),      /* 16407
*/
/* 288 */     NdrFcShort( 0x25c ),      /*
Offset= 604 (892) */
/* 290 */     NdrFcLong( 0x0 ),         /* 0 */
/* 294 */     NdrFcShort( 0x0 ),        /*
Offset= 0 (294) */
/* 296 */     NdrFcLong( 0x1 ),         /* 1 */
/* 300 */     NdrFcShort( 0x0 ),        /*
Offset= 0 (300) */
/* 302 */     NdrFcShort( 0xffffffff ), /*
Offset= -1 (301) */
/* 304 */
                                        0x15,
                          /* FC_STRUCT */
                                        0x7,
                          /* 7 */
/* 306 */     NdrFcShort( 0x8 ),        /* 8 */
/* 308 */     0xb,                      /*
FC_HYPER */
                                        0x5b,
                          /* FC_END */
/* 310 */
                                        0x12,
0x0,          /* FC_UP */
/* 312 */     NdrFcShort( 0xe ),        /*
Offset= 14 (326) */
/* 314 */
                                        0x1b,
                          /* FC_CARRAY */
                                        0x1,
                          /* 1 */
/* 316 */     NdrFcShort( 0x2 ),        /* 2 */
/* 318 */     0x9,                      /* Corr
desc: FC_ULONG */
                                        0x0,
                          /*  */
/* 320 */     NdrFcShort( 0xfffc ),     /* -4 */
/* 322 */     NdrFcShort( 0x1 ),        /* Corr
flags:  early, */
/* 324 */     0x6,                      /*
FC_SHORT */
                                        0x5b,
                          /* FC_END */
/* 326 */
                                        0x17,
                          /* FC_CSTRUCT */
                                        0x3,
                          /* 3 */
/* 328 */     NdrFcShort( 0x8 ),        /* 8 */

/* 330 */     NdrFcShort( 0xfffffff0 ), /*
Offset= -16 (314) */
/* 332 */     0x8,                      /*
FC_LONG */
                                        0x8,
                          /* FC_LONG */
/* 334 */     0x5c,                     /*
FC_PAD */
                                        0x5b,
                          /* FC_END */
/* 336 */
                                        0x2f,
                          /* FC_IP */
                                        0x5a,
                          /* FC_CONSTANT_IID
*/
/* 338 */     NdrFcLong( 0x0 ),         /* 0 */
/* 342 */     NdrFcShort( 0x0 ),        /* 0 */
/* 344 */     NdrFcShort( 0x0 ),        /* 0 */
/* 346 */     0xc0,                     /* 192
*/
                                        0x0,
                          /* 0 */
/* 348 */     0x0,                      /* 0 */
                                        0x0,
                          /* 0 */
/* 350 */     0x0,                      /* 0 */
                                        0x0,
                          /* 0 */
/* 352 */     0x0,                      /* 0 */
                                        0x46,
                          /* 70 */
/* 354 */
```

```
                                0x2f,
                        /* FC_IP */
                                0x5a,
                        /* FC_CONSTANT_IID
*/
/* 356 */      NdrFcLong( 0x20400 ),       /*
132096 */
/* 360 */      NdrFcShort( 0x0 ),          /* 0 */
/* 362 */      NdrFcShort( 0x0 ),          /* 0 */
/* 364 */      0xc0,                       /* 192
*/
                                0x0,
                        /* 0 */
/* 366 */      0x0,                        /* 0 */
                                0x0,
                        /* 0 */
/* 368 */      0x0,                        /* 0 */
                                0x0,
                        /* 0 */
/* 370 */      0x0,                        /* 0 */
                                0x46,
                        /* 70 */
/* 372 */
                                0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 374 */      NdrFcShort( 0x2 ),          /*
Offset= 2 (376) */
/* 376 */
                                0x12,
0x0,           /* FC_UP */
/* 378 */      NdrFcShort( 0x1e4 ),        /*
Offset= 484 (862) */
/* 380 */
                                0x2a,
                        /*
FC_ENCAPSULATED_UNION */
                                0x89,
                        /* 137 */
/* 382 */      NdrFcShort( 0x20 ),         /* 32 */
/* 384 */      NdrFcShort( 0xa ),          /* 10 */
/* 386 */      NdrFcLong( 0x8 ),           /* 8 */
/* 390 */      NdrFcShort( 0x50 ),         /*
Offset= 80 (470) */
/* 392 */      NdrFcLong( 0xd ),           /* 13 */
/* 396 */      NdrFcShort( 0x70 ),         /*
Offset= 112 (508) */
/* 398 */      NdrFcLong( 0x9 ),           /* 9 */
/* 402 */      NdrFcShort( 0x90 ),         /*
Offset= 144 (546) */
/* 404 */      NdrFcLong( 0xc ),           /* 12 */
/* 408 */      NdrFcShort( 0xb0 ),         /*
Offset= 176 (584) */
/* 410 */      NdrFcLong( 0x24 ),          /* 36 */
/* 414 */      NdrFcShort( 0x102 ),        /*
Offset= 258 (672) */
/* 416 */      NdrFcLong( 0x800d ),        /* 32781
*/
/* 420 */      NdrFcShort( 0x11e ),        /*
Offset= 286 (706) */
/* 422 */      NdrFcLong( 0x10 ),          /* 16 */
/* 426 */      NdrFcShort( 0x138 ),        /*
Offset= 312 (738) */
/* 428 */      NdrFcLong( 0x2 ),           /* 2 */
/* 432 */      NdrFcShort( 0x14e ),        /*
Offset= 334 (766) */
/* 434 */      NdrFcLong( 0x3 ),           /* 3 */
/* 438 */      NdrFcShort( 0x164 ),        /*
Offset= 356 (794) */
/* 440 */      NdrFcLong( 0x14 ),          /* 20 */
/* 444 */      NdrFcShort( 0x17a ),        /*
Offset= 378 (822) */
/* 446 */      NdrFcShort( 0xffffffff ),   /*
Offset= -1 (445) */
/* 448 */
                                0x21,
                        /* FC_BOGUS_ARRAY
*/
                                0x3,
                        /* 3 */
/* 450 */      NdrFcShort( 0x0 ),          /* 0 */
/* 452 */      0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                0x0,
                        /*  */
/* 454 */      NdrFcShort( 0x0 ),          /* 0 */
/* 456 */      NdrFcShort( 0x1 ),          /* Corr
flags:  early, */
/* 458 */      NdrFcLong( 0xffffffff ),    /* -1 */
/* 462 */      NdrFcShort( 0x0 ),          /* Corr
flags:  */
/* 464 */
                                0x12,
0x0,           /* FC_UP */
/* 466 */      NdrFcShort( 0xffffff74 ),   /*
Offset= -140 (326) */
/* 468 */      0x5c,                       /*
FC_PAD */
                                0x5b,
                        /* FC_END */
/* 470 */
                                0x1a,
                        /*
FC_BOGUS_STRUCT */
                                0x3,
                        /* 3 */
/* 472 */      NdrFcShort( 0x10 ),         /* 16 */
/* 474 */      NdrFcShort( 0x0 ),          /* 0 */
/* 476 */      NdrFcShort( 0x6 ),          /*
Offset= 6 (482) */
/* 478 */      0x8,                        /*
FC_LONG */
                                0x40,
                        /* FC_STRUCTPAD4
*/
/* 480 */      0x36,                       /*
FC_POINTER */
                                0x5b,
                        /* FC_END */
/* 482 */
                                0x11,
0x0,           /* FC_RP */
/* 484 */      NdrFcShort( 0xffffffdc ),   /*
Offset= -36 (448) */
/* 486 */
                                0x21,
                        /* FC_BOGUS_ARRAY
*/
                                0x3,
                        /* 3 */
/* 488 */      NdrFcShort( 0x0 ),          /* 0 */
/* 490 */      0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                0x0,
                        /*  */
/* 492 */      NdrFcShort( 0x0 ),          /* 0 */
/* 494 */      NdrFcShort( 0x1 ),          /* Corr
flags:  early, */
/* 496 */      NdrFcLong( 0xffffffff ),    /* -1 */
/* 500 */      NdrFcShort( 0x0 ),          /* Corr
flags:  */
/* 502 */      0x4c,                       /*
FC_EMBEDDED_COMPLEX */
                                0x0,
                        /* 0 */
/* 504 */      NdrFcShort( 0xffffff58 ),   /*
Offset= -168 (336) */
/* 506 */      0x5c,                       /*
FC_PAD */
                                0x5b,
                        /* FC_END */
/* 508 */                       0x1a,
                        /*
FC_BOGUS_STRUCT */
                                0x3,
                        /* 3 */
/* 510 */      NdrFcShort( 0x10 ),         /* 16 */
/* 512 */      NdrFcShort( 0x0 ),          /* 0 */
/* 514 */      NdrFcShort( 0x6 ),          /*
Offset= 6 (520) */
/* 516 */      0x8,                        /*
FC_LONG */
                                0x40,
                        /* FC_STRUCTPAD4
*/
/* 518 */      0x36,                       /*
FC_POINTER */
                                0x5b,
                        /* FC_END */
/* 520 */
                                0x11,
0x0,           /* FC_RP */
/* 522 */      NdrFcShort( 0xffffffdc ),   /*
Offset= -36 (486) */
/* 524 */
                                0x21,
                        /* FC_BOGUS_ARRAY
*/
                                0x3,
                        /* 3 */
/* 526 */      NdrFcShort( 0x0 ),          /* 0 */
/* 528 */      0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                0x0,
                        /*  */
/* 530 */      NdrFcShort( 0x0 ),          /* 0 */
/* 532 */      NdrFcShort( 0x1 ),          /* Corr
flags:  early, */
/* 534 */      NdrFcLong( 0xffffffff ),    /* -1 */
/* 538 */      NdrFcShort( 0x0 ),          /* Corr
flags:  */
/* 540 */      0x4c,                       /*
FC_EMBEDDED_COMPLEX */
                                0x0,
                        /* 0 */
/* 542 */      NdrFcShort( 0xffffff44 ),   /*
Offset= -188 (354) */
/* 544 */      0x5c,                       /*
FC_PAD */
                                0x5b,
                        /* FC_END */
/* 546 */
                                0x1a,
                        /*
FC_BOGUS_STRUCT */
                                0x3,
                        /* 3 */
/* 548 */      NdrFcShort( 0x10 ),         /* 16 */
/* 550 */      NdrFcShort( 0x0 ),          /* 0 */
/* 552 */      NdrFcShort( 0x6 ),          /*
Offset= 6 (558) */
/* 554 */      0x8,                        /*
FC_LONG */
                                0x40,
                        /* FC_STRUCTPAD4
*/
/* 556 */      0x36,                       /*
FC_POINTER */
                                0x5b,
                        /* FC_END */
/* 558 */
                                0x11,
0x0,           /* FC_RP */
```

```
/* 560 */      NdrFcShort( 0xffffffdc ),    /*
Offset= -36 (524) */
/* 562 */
                                           0x21,
                           /* FC_BOGUS_ARRAY
*/
                                           0x3,
                           /* 3 */
/* 564 */      NdrFcShort( 0x0 ),           /* 0 */
/* 566 */      0x19,                        /* Corr
desc:  field pointer, FC_ULONG */
                                           0x0,
                           /*  */
/* 568 */      NdrFcShort( 0x0 ),           /* 0 */
/* 570 */      NdrFcShort( 0x1 ),           /* Corr
flags:  early, */
/* 572 */      NdrFcLong( 0xffffffff ),     /* -1 */
/* 576 */      NdrFcShort( 0x0 ),           /* Corr
flags:  */
/* 578 */
                                           0x12,
0x0,           /* FC_UP */
/* 580 */      NdrFcShort( 0x176 ),         /*
Offset= 374 (954) */
/* 582 */      0x5c,                        /*
FC_PAD */
                                           0x5b,
                           /* FC_END */
/* 584 */
                                           0x1a,
                           /*
FC_BOGUS_STRUCT */
                                           0x3,
                           /* 3 */
/* 586 */      NdrFcShort( 0x10 ),          /* 16 */
/* 588 */      NdrFcShort( 0x0 ),           /* 0 */
/* 590 */      NdrFcShort( 0x6 ),           /*
Offset= 6 (596) */
/* 592 */      0x8,                         /*
FC_LONG */
                                           0x40,
                           /* FC_STRUCTPAD4
*/
/* 594 */      0x36,                        /*
FC_POINTER */
                                           0x5b,
                           /* FC_END */
/* 596 */
                                           0x11,
0x0,           /* FC_RP */
/* 598 */      NdrFcShort( 0xffffffdc ),    /*
Offset= -36 (562) */
/* 600 */
                                           0x2f,
                           /* FC_IP */
                                           0x5a,
                           /* FC_CONSTANT_IID
*/
/* 602 */      NdrFcLong( 0x2f ),           /* 47 */
/* 606 */      NdrFcShort( 0x0 ),           /* 0 */
/* 608 */      NdrFcShort( 0x0 ),           /* 0 */
/* 610 */      0xc0,                        /* 192
*/
                                           0x0,
                           /* 0 */
/* 612 */      0x0,                         /* 0 */
                                           0x0,
                           /* 0 */
/* 614 */      0x0,                         /* 0 */
                                           0x0,
                           /* 0 */
/* 616 */      0x0,                         /* 0 */
                                           0x46,
                           /* 70 */
/* 618 */
                                           0x1b,
                           /* FC_CARRAY */
                                           0x0,
                           /* 0 */
/* 620 */      NdrFcShort( 0x1 ),           /* 1 */
/* 622 */      0x19,                        /* Corr
desc:  field pointer, FC_ULONG */
                                           0x0,
                           /*  */
/* 624 */      NdrFcShort( 0x4 ),           /* 4 */
/* 626 */      NdrFcShort( 0x1 ),           /* Corr
flags:  early, */
/* 628 */      0x1,                         /*
FC_BYTE */
                                           0x5b,
                           /* FC_END */
/* 630 */
                                           0x1a,
                           /*
FC_BOGUS_STRUCT */
                                           0x3,
                           /* 3 */
/* 632 */      NdrFcShort( 0x18 ),          /* 24 */
/* 634 */      NdrFcShort( 0x0 ),           /* 0 */
/* 636 */      NdrFcShort( 0xa ),           /*
Offset= 10 (646) */
/* 638 */      0x8,                         /*
FC_LONG */
                                           0x8,
                           /* FC_LONG */
/* 640 */      0x4c,                        /*
FC_EMBEDDED_COMPLEX */
                                           0x0,
                           /* 0 */
/* 642 */      NdrFcShort( 0xffffffd6 ),    /*
Offset= -42 (600) */
/* 644 */      0x36,                        /*
FC_POINTER */
                                           0x5b,
                           /* FC_END */
/* 646 */
                                           0x12,
0x0,           /* FC_UP */
/* 648 */      NdrFcShort( 0xfffffffe2 ),   /*
Offset= -30 (618) */
/* 650 */
                                           0x21,
                           /* FC_BOGUS_ARRAY
*/
                                           0x3,
                           /* 3 */
/* 652 */      NdrFcShort( 0x0 ),           /* 0 */
/* 654 */      0x19,                        /* Corr
desc:  field pointer, FC_ULONG */
                                           0x0,
                           /*  */
/* 656 */      NdrFcShort( 0x0 ),           /* 0 */
/* 658 */      NdrFcShort( 0x1 ),           /* Corr
flags:  early, */
/* 660 */      NdrFcLong( 0xffffffff ),     /* -1 */
/* 664 */      NdrFcShort( 0x0 ),           /* Corr
flags:  */
/* 666 */
                                           0x12,
0x0,           /* FC_UP */
/* 668 */      NdrFcShort( 0xffffffda ),    /*
Offset= -38 (630) */
/* 670 */      0x5c,                        /*
FC_PAD */
                                           0x5b,
                           /* FC_END */
/* 672 */
                                           0x1a,
                           /*
FC_BOGUS_STRUCT */
                                           0x3,
/* 674 */      NdrFcShort( 0x10 ),          /* 16 */
/* 676 */      NdrFcShort( 0x0 ),           /* 0 */
/* 678 */      NdrFcShort( 0x6 ),           /*
Offset= 6 (684) */
/* 680 */      0x8,                         /*
FC_LONG */
                                           0x40,
                           /* FC_STRUCTPAD4
*/
/* 682 */      0x36,                        /*
FC_POINTER */
                                           0x5b,
                           /* FC_END */
/* 684 */
                                           0x11,
0x0,           /* FC_RP */
/* 686 */      NdrFcShort( 0xffffffdc ),    /*
Offset= -36 (650) */
/* 688 */
                                           0x1d,
                           /* FC_SMFARRAY */
                                           0x0,
                           /* 0 */
/* 690 */      NdrFcShort( 0x8 ),           /* 8 */
/* 692 */      0x1,                         /*
FC_BYTE */
                                           0x5b,
                           /* FC_END */
/* 694 */
                                           0x15,
                           /* FC_STRUCT */
                                           0x3,
                           /* 3 */
/* 696 */      NdrFcShort( 0x10 ),          /* 16 */
/* 698 */      0x8,                         /*
FC_LONG */
                                           0x6,
                           /* FC_SHORT */
/* 700 */      0x6,                         /*
FC_SHORT */
                                           0x4c,
                           /*
FC_EMBEDDED_COMPLEX */

/* 702 */      0x0,                         /* 0 */

               NdrFcShort( 0xfffffff1 ),    /*
Offset= -15 (688) */
                                           0x5b,
                           /* FC_END */
/* 706 */
                                           0x1a,
                           /*
FC_BOGUS_STRUCT */
                                           0x3,
                           /* 3 */
/* 708 */      NdrFcShort( 0x20 ),          /* 32 */
/* 710 */      NdrFcShort( 0x0 ),           /* 0 */
/* 712 */      NdrFcShort( 0xa ),           /*
Offset= 10 (722) */
/* 714 */      0x8,                         /*
FC_LONG */
                                           0x40,
                           /* FC_STRUCTPAD4
*/
/* 716 */      0x36,                        /*
FC_POINTER */
                                           0x4c,
                           /*
FC_EMBEDDED_COMPLEX */
/* 718 */      0x0,                         /* 0 */
```

```
            NdrFcShort( 0xfffffff7 ),   /*
Offset= -25 (694) */
                                        0x5b,
                        /* FC_END */
/* 722 */
                                        0x11,
0x0,            /* FC_RP */
/* 724 */      NdrFcShort( 0xffffff12 ),   /*
Offset= -238 (486) */
/* 726 */
                                        0x1b,
                        /* FC_CARRAY */
                                        0x0,
                        /* 0 */
/* 728 */      NdrFcShort( 0x1 ),          /* 1 */
/* 730 */      0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                        0x0,
                        /*  */
/* 732 */      NdrFcShort( 0x0 ),          /* 0 */
/* 734 */      NdrFcShort( 0x1 ),          /* Corr
flags:  early, */
/* 736 */      0x1,                        /*
FC_BYTE */
                                        0x5b,
                        /* FC_END */
/* 738 */
                                        0x1a,
                        /*
FC_BOGUS_STRUCT */
                                        0x3,
                        /* 3 */
/* 740 */      NdrFcShort( 0x10 ),         /* 16 */
/* 742 */      NdrFcShort( 0x0 ),          /* 0 */
/* 744 */      NdrFcShort( 0x6 ),          /*
Offset= 6 (750) */
/* 746 */      0x8,                        /*
FC_LONG */
                                        0x40,
                        /* FC_STRUCTPAD4
*/
/* 748 */      0x36,                       /*
FC_POINTER */
                                        0x5b,
                        /* FC_END */
/* 750 */
                                        0x12,
0x0,            /* FC_UP */
/* 752 */      NdrFcShort( 0xffffffe6 ),   /*
Offset= -26 (726) */
/* 754 */
                                        0x1b,
                        /* FC_CARRAY */
                                        0x1,
                        /* 1 */
/* 756 */      NdrFcShort( 0x2 ),          /* 2 */
/* 758 */      0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                        0x0,
                        /*  */
/* 760 */      NdrFcShort( 0x0 ),          /* 0 */
/* 762 */      NdrFcShort( 0x1 ),          /* Corr
flags:  early, */
/* 764 */      0x6,                        /*
FC_SHORT */
                                        0x5b,
                        /* FC_END */
/* 766 */
                                        0x1a,
                        /*
FC_BOGUS_STRUCT */
                                        0x3,
                        /* 3 */
/* 768 */      NdrFcShort( 0x10 ),         /* 16 */
/* 770 */      NdrFcShort( 0x0 ),          /* 0 */
Offset= 6 (778) */
/* 774 */      0x8,                        /*
FC_LONG */
                                        0x40,
                        /* FC_STRUCTPAD4
*/
/* 776 */      0x36,                       /*
FC_POINTER */
                                        0x5b,
                        /* FC_END */
/* 778 */
                                        0x12,
0x0,            /* FC_UP */
/* 780 */      NdrFcShort( 0xffffffe6 ),   /*
Offset= -26 (754) */
/* 782 */
                                        0x1b,
                        /* FC_CARRAY */
                                        0x3,
                        /* 3 */
/* 784 */      NdrFcShort( 0x4 ),          /* 4 */
/* 786 */      0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                        0x0,
                        /*  */
/* 788 */      NdrFcShort( 0x0 ),          /* 0 */
/* 790 */      NdrFcShort( 0x1 ),          /* Corr
flags:  early, */
/* 792 */      0x8,                        /*
FC_LONG */
                                        0x5b,
                        /* FC_END */
/* 794 */
                                        0x1a,
                        /*
FC_BOGUS_STRUCT */
                                        0x3,
                        /* 3 */
/* 796 */      NdrFcShort( 0x10 ),         /* 16 */
/* 798 */      NdrFcShort( 0x0 ),          /* 0 */
/* 800 */      NdrFcShort( 0x6 ),          /*
Offset= 6 (806) */
/* 802 */      0x8,                        /*
FC_LONG */
                                        0x40,
                        /* FC_STRUCTPAD4
*/
/* 804 */      0x36,                       /*
FC_POINTER */
                                        0x5b,
                        /* FC_END */
/* 806 */
                                        0x12,
0x0,            /* FC_UP */
/* 808 */      NdrFcShort( 0xffffffe6 ),   /*
Offset= -26 (782) */
/* 810 */
                                        0x1b,
                        /* FC_CARRAY */
                                        0x7,
                        /* 7 */
/* 812 */      NdrFcShort( 0x8 ),          /* 8 */
/* 814 */      0x19,                       /* Corr
desc:  field pointer, FC_ULONG */
                                        0x0,
                        /*  */
/* 816 */      NdrFcShort( 0x0 ),          /* 0 */
/* 818 */      NdrFcShort( 0x1 ),          /* Corr
flags:  early, */
/* 820 */      0xb,                        /*
FC_HYPER */
                                        0x5b,
                        /* FC_END */
/* 822 */
                                        0x1a,
                        /*
FC_BOGUS_STRUCT */
                                        0x3,
                        /* 3 */
/* 824 */      NdrFcShort( 0x10 ),         /* 16 */
/* 826 */      NdrFcShort( 0x0 ),          /* 0 */
/* 828 */      NdrFcShort( 0x6 ),          /*
Offset= 6 (834) */
/* 830 */      0x8,                        /*
FC_LONG */
                                        0x40,
                        /* FC_STRUCTPAD4
*/
/* 832 */      0x36,                       /*
FC_POINTER */
                                        0x5b,
                        /* FC_END */
/* 834 */
                                        0x12,
0x0,            /* FC_UP */
/* 836 */      NdrFcShort( 0xffffffe6 ),   /*
Offset= -26 (810) */
/* 838 */
                                        0x15,
                        /* FC_STRUCT */
                                        0x3,
                        /* 3 */
/* 840 */      NdrFcShort( 0x8 ),          /* 8 */
/* 842 */      0x8,                        /*
FC_LONG */
                                        0x8,
                        /* FC_LONG */
/* 844 */      0x5c,                       /*
FC_PAD */
                                        0x5b,
                        /* FC_END */
/* 846 */
                                        0x1b,
                        /* FC_CARRAY */
                                        0x3,
                        /* 3 */
/* 848 */      NdrFcShort( 0x8 ),          /* 8 */
/* 850 */      0x7,                        /* Corr
desc: FC_USHORT */
                                        0x0,
                        /*  */
/* 852 */      NdrFcShort( 0xffc8 ),       /* -56 */
/* 854 */      NdrFcShort( 0x1 ),          /* Corr
flags:  early, */
/* 856 */      0x4c,                       /*
FC_EMBEDDED_COMPLEX */
                                        0x0,
                        /* 0 */
/* 858 */      NdrFcShort( 0xffffffec ),   /*
Offset= -20 (838) */
/* 860 */      0x5c,                       /*
FC_PAD */
                                        0x5b,
                        /* FC_END */
/* 862 */
                                        0x1a,
                        /*
FC_BOGUS_STRUCT */
                                        0x3,
                        /* 3 */
/* 864 */      NdrFcShort( 0x38 ),         /* 56 */
/* 866 */      NdrFcShort( 0xffffffec ),   /*
Offset= -20 (846) */
/* 868 */      NdrFcShort( 0x0 ),          /*
Offset= 0 (868) */
/* 870 */      0x6,                        /*
FC_SHORT */
```

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                                0x6,
                        /* FC_SHORT */
/* 872 */      0x8,                 /*
FC_LONG */
                                0x8,
                        /* FC_LONG */
/* 874 */      0x40,                /*
FC_STRUCTPAD4 */
                                0x4c,
                        /*
FC_EMBEDDED_COMPLEX */
/* 876 */      0x0,                 /* 0 */

                NdrFcShort( 0xfffffe0f ),   /*
Offset= -497 (380) */
                                0x5b,
                        /* FC_END */
/* 880 */
                                0x12,
0x0,            /* FC_UP */
/* 882 */      NdrFcShort( 0xffffff04 ),   /*
Offset= -252 (630) */
/* 884 */
                                0x12,
0x8,            /* FC_UP [simple_pointer] */
/* 886 */      0x1,                 /*
FC_BYTE */
                                0x5c,
                        /* FC_PAD */
/* 888 */
                                0x12,
0x8,            /* FC_UP [simple_pointer] */
/* 890 */      0x6,                 /*
FC_SHORT */
                                0x5c,
                        /* FC_PAD */
/* 892 */
                                0x12,
0x8,            /* FC_UP [simple_pointer] */
/* 894 */      0x8,                 /*
FC_LONG */
                                0x5c,
                        /* FC_PAD */
/* 896 */
                                0x12,
0x8,            /* FC_UP [simple_pointer] */
/* 898 */      0xb,                 /*
FC_HYPER */
                                0x5c,
                        /* FC_PAD */
/* 900 */
                                0x12,
0x8,            /* FC_UP [simple_pointer] */
/* 902 */      0xa,                 /*
FC_FLOAT */
                                0x5c,
                        /* FC_PAD */
/* 904 */
                                0x12,
0x8,            /* FC_UP [simple_pointer] */
/* 906 */      0xc,                 /*
FC_DOUBLE */
                                0x5c,
                        /* FC_PAD */
/* 908 */
                                0x12,
0x0,            /* FC_UP */
/* 910 */      NdrFcShort( 0xfffffda2 ),   /*
Offset= -606 (304) */
/* 912 */
                                0x12,
0x10,           /* FC_UP [pointer_deref] */
/* 914 */      NdrFcShort( 0xfffffda4 ),   /*
Offset= -604 (310) */
/* 916 */
                                0x12,
0x10,           /* FC_UP [pointer_deref] */
/* 918 */      NdrFcShort( 0xfffffdba ),   /*
Offset= -582 (336) */
/* 920 */
                                0x12,
0x10,           /* FC_UP [pointer_deref] */
/* 922 */      NdrFcShort( 0xfffffdc8 ),   /*
Offset= -568 (354) */
/* 924 */
                                0x12,
0x10,           /* FC_UP [pointer_deref] */
/* 926 */      NdrFcShort( 0xfffffdd6 ),   /*
Offset= -554 (372) */
/* 928 */
                                0x12,
0x10,           /* FC_UP [pointer_deref] */
/* 930 */      NdrFcShort( 0x2 ),          /*
Offset= 2 (932) */
/* 932 */
                                0x12,
0x0,            /* FC_UP */
/* 934 */      NdrFcShort( 0x14 ),         /*
Offset= 20 (954) */
/* 936 */
                                0x15,
                        /* FC_STRUCT */
                                0x7,
                        /* 7 */
/* 938 */      NdrFcShort( 0x10 ),         /* 16 */
/* 940 */      0x6,                 /*
FC_SHORT */
                                0x1,
                        /* FC_BYTE */
/* 942 */      0x1,                 /*
FC_BYTE */
                                0x8,
                        /* FC_LONG */
/* 944 */      0xb,                 /*
FC_HYPER */
                                0x5b,
                        /* FC_END */
/* 946 */
                                0x12,
0x0,            /* FC_UP */
/* 948 */      NdrFcShort( 0xfffffff4 ),   /*
Offset= -12 (936) */
/* 950 */
                                0x12,
0x8,            /* FC_UP [simple_pointer] */
/* 952 */      0x2,                 /*
FC_CHAR */
                                0x5c,
                        /* FC_PAD */
/* 954 */
                                0x1a,
                        /*
FC_BOGUS_STRUCT */
                                0x7,
                        /* 7 */
/* 956 */      NdrFcShort( 0x20 ),         /* 32 */
/* 958 */      NdrFcShort( 0x0 ),          /* 0 */
/* 960 */      NdrFcShort( 0x0 ),          /*
Offset= 0 (960) */
/* 962 */      0x8,                 /*
FC_LONG */
                                0x8,
                        /* FC_LONG */
/* 964 */      0x6,                 /*
FC_SHORT */
                                0x6,
                        /* FC_SHORT */
/* 966 */      0x6,                 /*
FC_SHORT */
                                0x6,
                        /* FC_SHORT */
/* 968 */      0x4c,                /*
FC_EMBEDDED_COMPLEX */      0x0,
                        /* 0 */
/* 970 */      NdrFcShort( 0xffffffc3c ),  /*
Offset= -964 (6) */
/* 972 */      0x5c,                /*
FC_PAD */
                                0x5b,
                        /* FC_END */
/* 974 */      0xb4,                /*
FC_USER_MARSHAL */
                                0x83,
                        /* 131 */
/* 976 */      NdrFcShort( 0x0 ),          /* 0 */
/* 978 */      NdrFcShort( 0x18 ),         /* 24 */
/* 980 */      NdrFcShort( 0x0 ),          /* 0 */
/* 982 */      NdrFcShort( 0xffffffc2c ),  /*
Offset= -980 (2) */
/* 984 */
                                0x11,
0x4,            /* FC_RP [alloced_on_stack] */
/* 986 */      NdrFcShort( 0x6 ),          /*
Offset= 6 (992) */
/* 988 */
                                0x13,
0x0,            /* FC_OP */
/* 990 */      NdrFcShort( 0xffffffdc ),   /*
Offset= -36 (954) */
/* 992 */      0xb4,                /*
FC_USER_MARSHAL */
                                0x83,
                        /* 131 */
/* 994 */      NdrFcShort( 0x0 ),          /* 0 */
/* 996 */      NdrFcShort( 0x18 ),         /* 24 */
/* 998 */      NdrFcShort( 0x0 ),          /* 0 */
/* 1000 */     NdrFcShort( 0xfffffff4 ),   /*
Offset= -12 (988) */
                                0x0

    }
  };

static const
USER_MARSHAL_ROUTINE_QUADRUPLE
UserMarshalRoutines[
WIRE_MARSHAL_TABLE_SIZE ] =

    {

      {
      VARIANT_UserSize
      ,VARIANT_UserMarshal
      ,VARIANT_UserUnmarshal
      ,VARIANT_UserFree
      }

    };



/* Standard interface:
__MIDL_itf_tpcc_com_ps_0000, ver. 0.0,

GUID={0x00000000,0x0000,0x0000,{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}} */

#pragma code_seg(".orpc")
static const unsigned short
ITPCC_FormatStringOffsetTable[] =
    {
    0,
    44,
    88,
    132,
    176,
    220
    };

static const MIDL_STUBLESS_PROXY_INFO
ITPCC_ProxyInfo =
    {
    &Object_StubDesc,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0
    };


static const MIDL_SERVER_INFO
ITPCC_ServerInfo =
    {
    &Object_StubDesc,
    0,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0,
    0};
CINTERFACE_PROXY_VTABLE(9)
_ITPCCProxyVtbl =
{
    &ITPCC_ProxyInfo,
    &IID_ITPCC,
    IUnknown_QueryInterface_Proxy,
    IUnknown_AddRef_Proxy,
    IUnknown_Release_Proxy ,
    (void *) (INT_PTR) -1 /* ITPCC::NewOrder */
,
    (void *) (INT_PTR) -1 /* ITPCC::Payment */ ,
    (void *) (INT_PTR) -1 /* ITPCC::Delivery */ ,
    (void *) (INT_PTR) -1 /* ITPCC::StockLevel */
,
    (void *) (INT_PTR) -1 /* ITPCC::OrderStatus
*/ ,
    (void *) (INT_PTR) -1 /*
ITPCC::CallSetComplete */
};

const CInterfaceStubVtbl _ITPCCStubVtbl =
{
    &IID_ITPCC,
    &ITPCC_ServerInfo,
    9,
    0, /* pure interpreted */
    CStdStubBuffer_METHODS
};

static const MIDL_STUB_DESC Object_StubDesc
=
    {
    0,
    NdrOleAllocate,
    NdrOleFree,
    0,
    0,
    0,
    0,
    __MIDL_TypeFormatString.Format,
    1, /* -error bounds_check flag */
    0x50002, /* Ndr library version */
    0,
    0x600015b, /* MIDL Version 6.0.347 */
    0,
    UserMarshalRoutines,
    0,  /* notify & notify_flag routine table */
    0x1, /* MIDL flag */
    0, /* cs routines */
    0,   /* proxy/server info */
    0   /* Reserved5 */
    };

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_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_IA64) ||
defined(_M_AMD64)*/
```

Appendix B Database Load

Setup.vbs

```
'---------------------------------------------------------------------
----------------------
'---  FILE:      SETUP.VBS
'---             Microsoft TPC-C Kit Ver. 4.63
'---             Copyright Microsoft, 2001, 2002, 2005,
2004, 2005
'---             All Rights Reserved
'---
'---  PURPOSE:    This module performs the tasks to
create and populate a TPC-C database
'---
'---------------------------------------------------------------------
----------------------
'-------------------------------------------------------
'--- set the kit verison variable for later display
'-------------------------------------------------------
Kit_Version = "  4.63"
SQL2K_Kit_Version = "  4.55"
'-----------------------------------------
'--- open an windows scripting object
'-----------------------------------------
Set WshShell = CreateObject("WScript.Shell")
'-------------------------------------------------------
'--- set up windows scripting argument collection
'-------------------------------------------------------
Set ObjArgs = wScript.ARGUMENTS
'---------------------------------------------------------------------
-----------
'--- grab the plaftorm, ia64, x86, from the environment
variables
'---------------------------------------------------------------------
-----------
Platform =
LCase(Left(WshShell.ExpandEnvironmentStrings("%PR
OCESSOR_IDENTIFIER%"), 4))
Select Case Platform
        Case "ia64"
                Platform = "IA64"
        Case Else
                Platform = "X86"
End Select
'---------------------------------------------------------------------
-------------
'--- grab the processor architecture.  This is to
determine if the
'--- user is trying to run in 32-bit emulation on a 64-bit
machine.
'--- if that is the case, then display a message and exit.
'---------------------------------------------------------------------
--------------
Proc_Architecture =
WshShell.ExpandEnvironmentStrings("%PROCESSOR_
ARCHITECTURE%")
If Platform = "IA64" And Proc_Architecture = "x86"
Then
        wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
"
        wScript.Echo "!!
!!"
        wScript.Echo "!! You are attempting to run this
SETUP in the 32-bit (WOW) emulation !!"
        wScript.Echo "!! mode on an ia64 system.
Please restart the SETUP in a native      !!"
        wScript.Echo "!! 64-bit environment.
!!"
        wScript.Echo "!!
!!"

        wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
"
        wScript.Quit
End If
'-------------------------------------------------------
'--- 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."
& Kit_Version & "                          *"
wScript.Echo "*
*"
wScript.Echo "*  Database Setup
*"
wScript.Echo "*
*"
wScript.Echo
"**********************************************
**********************************"
'-------------------------------------------------
'--- Initialize an array of the TPC-C table names
'-------------------------------------------------
Dim TableArray(9)
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"
TableArray(9) = "tpccldr"
'-------------------------------------------------------
'--- 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) = "dbopt.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) = "idxordnc.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")
'---------------------------------------------------------------------
----
'--- first see if the user passed a "?" as the first
parameter
'--- if they did, then show the usage data
'---------------------------------------------------------------------
----
If ObjArgs.Length > 0 Then
        If ObjArgs(0) = "?"  or ObjArgs(0) = "/?"
Then
            Call ShowUsage
        End If
End If
'--- get the user passed in parameters
If WScript.Arguments.Named.Exists("S") Then
   ServerName = wScript.Arguments.Named.Item("S")
   If ServerName = "" Then
      ServerName =
WshShell.ExpandEnvironmentStrings("%COMPUTERNA
ME%")
   End If
   flgServerName = 1
Else
   ServerName =
WshShell.ExpandEnvironmentStrings("%COMPUTERNA
ME%")
   flgServerName = 0
End If
SQLUserID = wScript.Arguments.Named.Item("U")
If SQLUserID <> "" Then
   flgSQLUserID = 1
Else
   flgSQLUserID = 0
End If
SQLPassword = wScript.Arguments.Named.Item("P")
If SQLPassword <> "" Then
   flgSQLPassword = 1
Else
   flgSQLPassword = 0
End If
If SQLPassword = "BLANK" Then
        flgSQLPassword = 1
   SQLPassword = ""
End If
NumberWarehouses =
wScript.Arguments.Named.Item("W")
If NumberWarehouses <> "" Then
   flgNumberWarehouses = 1
Else
   flgNumberWarehouses = 0
End If
BuildOption = wScript.Arguments.Named.Item("B")
```

```
If BuildOption <> "" Then
    'validate the build option the user passed in
    BuildOption = LCase(BuildOption)
    Select Case BuildOption
        Case
"full","builddb","objects","objectsfull","bulkload","bulkl
oadfull","backup"

            flgBuildOption = 1
        Case Else
            flgBuildOption = 0
    End Select
Else
    flgBuildOption = 0
End If
DatabaseType = wScript.Arguments.Named.Item("D")
If DatabaseType <> "" Then
    DatabaseType = LCase(DatabaseType)
    Select Case DatabaseType
        Case "normal","scale_down"
            If DatabaseType = "normal" Then
                DatabaseType = 0
            Else
                DatabaseType = 1
            End If
            flgDatabaseType = 1
        Case Else
            flgDatabaseType = 0
    End Select
Else
    flgDatabaseType = 0
End If
UnattendedBuild =
wScript.Arguments.Named.Item("V")
If UnattendedBuild <> "" Then
    UnattendedBuild = LCase(UnattendedBuild)
    Select Case UnattendedBuild
        Case "true","false"
            flgUnattendedBuild = 1
        Case Else
            flgUnattendedBuild = 0
    End Select
Else
    flgUnattendedBuild = 0
End If
'--- if something is missing, prompt the user for it
If flgServerName = 0 Then
    ServerName = GetUserInput("ServerName")
    If ServerName = "" Then
        ServerName =
WshShell.ExpandEnvironmentStrings("%COMPUTERNA
ME%")
    End If
End If
If flgSQLUserID = 0 Then
    SQLUserID = GetUserInput("SQLUserID")
End If
If flgSQLPassword = 0 Then
    SQLPassword = GetUserInput("SQLPassword")
End If
If flgNumberWarehouses = 0 Then
    NumberWarehouses =
GetUserInput("NumberWarehouses")
End If
If flgBuildOption = 0 Then
    BuildOption = GetUserInput("BuildOption")
End If
If flgDatabaseType = 0 Then
    DatabaseType = (GetUserInput("DatabaseType"))
End If
If flgUnattendedBuild = 0 Then
    UnattendedBuild =
GetUserInput("UnattendedBuild")
End If

If SQLPassword = "BLANK" Then
    SQLPassword = ""
End If
'-------------------------------------------------------------
'--- if the user specified a scale down database, then
show
'--- them the warning message

'-------------------------------------------------------------
If DatabaseType = 1 Then
    MsgBox "WARNING!" & Chr(13) & "The
Scale_Down option is to be used for functional testing
only." _
        & Chr(13) & "The use of this option
will not produce a valid TPC-C result.", _
        vbExclamation, "Scale-Down
Warning"
End If
'-------------------------------------------------------------
'--- before we start to do anything, verify the input
'-------------------------------------------------------------
Select Case BuildOption
    Case "full"
        strBuildOpt = "Full build"
    Case "builddb"
        strBuildOpt = "Build database only"
    Case "objects"
        strBuildOpt = "Install stored procedures
only"
    Case "objectsfull"
        strBuildOpt = "Install stored procedures
and complete build process"
    Case "bulkload"
        strBuildOpt = "Load data only"
    Case "bulkloadfull"
        strBuildOpt = "Load data and complete
build process"
    Case "backup"
        strBuildOpt = "Backup database"
End Select
If DatabaseType = 1 Then
    strDBType = "Scale Down"
Else
    strDBType = "Normal"
End If
If UnattendedBuild = "false" Then
    rc = MsgBox("The following options will be
used:" & Chr(13) & Chr(10) & Chr(13) & Chr(10) _
                & "Database
Server Name:     " & ServerName & Chr(13) & Chr(10)
_
                & Chr(13) &
Chr(10) _
                & "SQL Server
User ID:         " & SQLUserID & Chr(13) & Chr(10) _
                & Chr(13) &
Chr(10) _
                & "SQL Server
Password:       " & SQLPassword & Chr(13) & Chr(10)
_
                & Chr(13) &
Chr(10) _
                & "Number of
Warehouses:    " & NumberWarehouses & Chr(13) &
Chr(10) _
                & Chr(13) &
Chr(10) _
                & "Build
Option:                " & strBuildOpt & Chr(13) &
Chr(10) _
                & Chr(13) &
Chr(10) _
                & "Build Type:
" & strDBType & Chr(13) & Chr(10) _
                & "
", 65, "TPC-C Setup Option Verification")
    If rc = 2 Then
        wScript.Echo ""
        wScript.Echo "TPC-C Setup cancelled by
user."
        wScript.Quit
    End If
End If

'-------------------------------------------------------------
------------
'--- parse the ServerName to determine if this is a
named instance
'-------------------------------------------------------------
------------
Slash_Loc = InStr(1,ServerName,"\")
If Slash_Loc <> 0 Then
    SQLInstanceName =
Right(ServerName,(LEN(ServerName) - Slash_Loc))
Else
    SQLInstanceName = ""
End If
'-------------------------------------------------------------
------------
'--- now we need to figure out if this is SQL Server
2000 or SQL Server 2005
'--- if this is being installed on SQL Server 2000, then
abort the load and
'--- direct the user to use the 4.55 kit which is SQL
Server 2000 compliant
'-------------------------------------------------------------
------------
'If SQLInstanceName = "" Then
    '--- check for default installations
    '--- SQL Server 2000 Default Instance
'    strRegKey =
"HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSSQL
Server\CurrentVersion\CurrentVersion"
'    If CheckRegKey(strRegKey) = True Then
'        SQLServerVersionRegKey =
WshShell.RegRead(strRegKey)
'    End If
    '--- SQL Server 2005 Default Instance
'    strRegKey =
"HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSSQL
Server\MSSQLServer\CurrentVersion\CurrentVersion"
'    If CheckRegKey(strRegKey) = True Then
'        SQLServerVersionRegKey =
WshShell.RegRead(strRegKey)
'    End If
'Else
    '--- SQL Server 2000 Named Instance
    'If
CheckRegKey("HKEY_LOCAL_MACHINE\SOFTWARE\Mi
crosoft\MSSQLServer\CurrentVersion\CurrentVersion")
= True Then
    '    SQLServerVersionRegKey =
WshShell.RegRead("HKEY_LOCAL_MACHINE\SOFTWA
RE\Microsoft\MSSQLServer\CurrentVersion\CurrentVer
sion")
    'End If
    '--- SQL Server 2005 Named Instance
'    strRegKey =
"HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Micros
oft SQL Server\" & SQLInstanceName &
"\MSSQLServer\CurrentVersion\CurrentVersion"
'    If CheckRegKey(strRegKey) = True Then
'        SQLServerVersionRegKey =
WshShell.RegRead(strRegKey)
'    End If
'End If
'If Left(SQLServerVersionRegKey,1) = "8" Then
'    SQLServerVersion = "2000"
```

```
'    wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
"
'    wScript.Echo "!!
!!"
'    wScript.Echo "!! The Microsoft TPC-C Benchmark
Kit Version" & Kit_Version & " is for use with    !!"
'    wScript.Echo "!! SQL Server 2005 only.  If you
require SQL Server 2000 then you     !!"
'    wScript.Echo "!! must use the Microsoft TPC-C
Benchmark Kit Version" & SQL2K_Kit_Version & " .
!!"

'    wScript.Echo "!!
!!"
'    wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
"
'    wScript.Quit
'Else
   SQLServerVersion = "2005"
'End If
'-----------------------------------------
'--- set the directory path names
'-----------------------------------------
SetupDirectory = WshShell.CurrentDirectory & "\"
ACIDDirectory = Left(SetupDirectory,
(Len(SetupDirectory) - 6))
ScriptDirectory = SetupDirectory & "Scripts\"
UtilityDirectory = ScriptDirectory & "Utility\"
DDLDirectory = ScriptDirectory & NumberWarehouses
& ".war\DDL\"
DMLDirectory = ScriptDirectory & "DML\"
DBDirectory = ScriptDirectory & NumberWarehouses &
".war\Database\"
'-------------------------------------------------
'--- the log directory will be a concatenation
'--- of the number of customers and the date
'-------------------------------------------------
LogDirectory = SetupDirectory & "Logs\" &
NumberWarehouses & "_Warehouses_" & Month(Now)
& "-" & Day(Now) & "-" & Year(Now) & "_"
'-------------------------------------------------------------
'--- now figure out if a previous directory exists with
this
'--- customer and data combination.  If not, the
append a
'--- 1 to the directory name, else append with the next
'--- number in sequence.
'-------------------------------------------------------------
Dir_Flag = 0
Directory_Index = 1
Do While Dir_Flag = 0
        if (fs.FolderExists(LogDirectory &
Directory_Index)) Then
                Directory_Index =
Directory_Index + 1
        Else
                LogDirectory =
LogDirectory & Directory_Index
                Dir_Flag = 1
        End If
Loop
fs.CreateFolder(LogDirectory)
LogDirectory = LogDirectory & "\"
'-------------------------------------------------------------
'--- initialize the BuildSteps.log file and output all of the
'--- particulars
'-------------------------------------------------------------
BuildStepLogFile = LogDirectory & "BuildSteps.log"
Call WriteBuildLog("Begin TPC-C Setup Process","")

Call
WriteBuildLog("==========================
==================================
==================================
==========","")
Call WriteBuildLog("SQL Server Name = " &
ServerName,"")
Call WriteBuildLog("System Platform = " & Platform,"")
Call WriteBuildLog("System Architecture = " &
Proc_Architecture,"")
Call WriteBuildLog("Number of Processors = " &
NumberofProcessors,"")

Call WriteBuildLog("SQL Server Version = " &
SQLServerVersionRegKey,"")


Call WriteBuildLog("SQL Server User ID = " &
SQLUserID,"")
If SQLPassword = "" Then
        Call WriteBuildLog("SQL Server Password
= <Blank>","")
Else
        Call WriteBuildLog("SQL Server Password
= ********","")
End If
Call WriteBuildLog("Number of Warehouses = " &
NumberWarehouses,"")
Call WriteBuildLog("Build Option = " & BuildOption,"")
Call WriteBuildLog("Database Type = " &
DatabaseType,"")
Call WriteBuildLog("Unattended Build = " &
UnattendBuild,"")
Call WriteBuildLog("Setup Directory = " &
SetupDirectory,"")
Call WriteBuildLog("ACID Directory = " &
ACIDDirectory,"")
Call WriteBuildLog("Script Directory = " &
ScriptDirectory,"")
Call WriteBuildLog("Utility Directory = " &
UtilityDirectory,"")
Call WriteBuildLog("DDL Directory = " &
DDLDirectory,"")
Call WriteBuildLog("DML Directory = " &
DMLDirectory,"")
Call WriteBuildLog("Database Directory = " &
DBDirectory,"")
Call WriteBuildLog("Log Directory = " &
LogDirectory,"")
Call
WriteBuildLog("==========================
==================================
==================================
==========","")
'-------------------------------------------------------------
--
'--- now that we have all the variables filled in, let's get
to work
'--- cleanup any old .err files
'-------------------------------------------------------------
-
For i = 0 To 9
    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 & LogFileArray(i)) Then
        fs.DeleteFile LogPath & LogFileArray(i)
    End If
Next
wScript.Echo FormatDateTime(Now,0) & " ==>
Checking connectivity to SQL Server..."
Call WriteBuildLog("Verifying SQL Server
connectivity","")

Set oExec = WshShell.Exec("osql -U" & SQLUserID & "
-P" & SQLPassword & " -S" & ServerName & " -e -i" &
UtilityDirectory & "version.sql -o" & LogDirectory &
"version.log")
Do While oExec.Status = 0
   wScript.Sleep 100
Loop
rc = CheckSQLOutput(LogDirectory & "version.log")
If rc <> 0 Then
   Call WriteBuildLog("Verifying SQL Server
connectivity","Step failed! - Check version.log")
   wScript.Echo FormatDateTime(Now,0) & " ==>
Could not connect to SQL Server! Check version.log."
   wScript.Quit

End If


Call WriteBuildLog("SQL Server connectivity
verified","")
wScript.Echo ""
'---------------------------------------
'--- okay, let's do it
'---------------------------------------
If (BuildOption = "full" Or BuildOption = "builddb")
Then
   wScript.Echo FormatDateTime(Now,0) & " ==>
Removing any existing TPC-C database and backup
devices..."
        Call WriteBuildLog("Removing any
existing TPC-C database and backup devices","")
        wScript.Echo ""
        Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & DBDirectory & "RemoveDB.sql
-o" & LogDirectory & "RemoveDB.log")
        Do While oExec.Status = 0
                wScript.Sleep 100
        Loop
        rc = CheckSQLOutput(LogDirectory &
"RemoveDB.log")
        If rc <> 0 Then
                Call
WriteBuildLog("Removing any existing TPC-C database
and backup devices","Step failed! - Check
RemoveDB.log")
                wScript.Echo
FormatDateTime(Now,0) & " ==> Removing existing
TPC-C database failed! Check RemoveDB.log."
                wScript.Quit
        End If
        Call WriteBuildLog("Any existing TPC-C
database and backup devices removed","")
        wScript.Echo FormatDateTime(Now,0) &
" ==> Building database files and database..."
        Call WriteBuildLog("Create TPC-C
database","")
        Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & DBDirectory & "CreateDB.sql -
o" & LogDirectory & "CreateDB.log")
        Do While oExec.Status = 0
                wScript.Sleep 100
        Loop
        rc = CheckSQLOutput(LogDirectory &
"CreateDB.log")
        If rc <> 0 Then
                Call WriteBuildLog("Create
TPC-C database","Step failed! - Check CreateDB.log")
                wScript.Echo
FormatDateTime(Now,0) & " ==> Creation of TPC-C
database failed!! Check CreateDB.log."
                wScript.Quit
        End If
        wScript.Echo FormatDateTime(Now,0) &
" ==> TPC-C Database creation complete."
```

```
                Call WriteBuildLog("TPC-C database
created","")
End If
'-------------------------------------------
'--- build tables and stored procedures
'-------------------------------------------
If (BuildOption = "full" Or BuildOption = "objects" Or
BuildOption = "objectsfull") Then
                wScript.Echo ""
    wScript.Echo FormatDateTime(Now,0) & " ==>
Creating TPC-C database tables..."
                Call WriteBuildLog("Create dynamic TPC-
C database tables","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & DDLDirectory & "Tables.sql -
o" & LogDirectory & "Tables.log")
                Do While oExec.Status = 0

                        wScript.Sleep 100
                Loop
                rc = CheckSQLOutput(LogDirectory &
"Tables.log")
                If rc <> 0 Then
                        Call WriteBuildLog("Create
TPC-C database tables","Step failed! - Check
Tables.log")
                        wScript.Echo
FormatDateTime(Now,0) & " ==> Creation of TPC-C
database tables failed!! Check Tables.log."
                        wScript.Quit
                End If
                wScript.Echo FormatDateTime(Now,0) &
" ==> TPC-C database tables created."
                Call WriteBuildLog("TPC-C database
tables created","")
                wScript.Echo ""
    wScript.Echo FormatDateTime(Now,0) & " ==>
Installing TPC-C stored procedures..."
                Call WriteBuildLog("Install TPC-C stored
procedures","")
                wScript.Echo "                New
Order..."
                Call WriteBuildLog("    Install TPC-C
stored procedures (New Order)","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & DMLDirectory & "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
                        Call WriteBuildLog("Install
TPC-C stored procedures (New Order)","Step failed! -
Check SP_NewOrd.log")
                  wScript.Quit
                End If
                wScript.Echo "                New
Order (New)..."
                Call WriteBuildLog("    Install TPC-C
stored procedures (New Order (New))","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & DMLDirectory &
"TPCC_NEWORDER_NEW.SQL -o" & LogDirectory &
"SP_NewOrd_New.log")
                Do While oExec.Status = 0
                  wScript.Sleep 100
                Loop
                rc = CheckSQLOutput(LogDirectory &
"SP_NewOrd_New.log")
                If rc <> 0 Then
                        Call WriteBuildLog("Install
TPC-C stored procedures (New Order (New))","Step
failed! - Check SP_NewOrd_New.log")
                  wScript.Quit
                End If
                wScript.Echo "
Payment..."
                Call WriteBuildLog("    Install TPC-C
stored procedures (Payment)","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & DMLDirectory & "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

                        Call WriteBuildLog("Install
TPC-C stored procedures (Payment)","Step failed! -
Check SP_Payment.log")
                  wScript.Quit
                End If
                wScript.Echo "                Order
Status..."
                Call WriteBuildLog("    Install TPC-C
stored procedures (Order Status)","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & DMLDirectory & "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
                        Call WriteBuildLog("Install
TPC-C stored procedures (Order Status)","Step failed!
- Check SP_OrdStat.log")
                  wScript.Quit
                End If
                wScript.Echo "
Delivery..."
                Call WriteBuildLog("    Install TPC-C
stored procedures (Delivery)","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & DMLDirectory & "delivery.sql -
o" & LogDirectory & "SP_Delivery.log")
                Do While oExec.Status = 0
                  wScript.Sleep 100
                Loop
                rc = CheckSQLOutput(LogDirectory &
"SP_Delivery.log")
                If rc <> 0 Then
                        Call WriteBuildLog("Install
TPC-C stored procedures (Delivery)","Step failed! -
Check SP_Delivery.log")
                  wScript.Quit
                End If
                wScript.Echo "                Stock
Level..."
                Call WriteBuildLog("    Install TPC-C
stored procedures (Stock Level)","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & DMLDirectory & "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
                        Call WriteBuildLog("Install
TPC-C stored procedures (Stock Level)","Step failed! -
Check SP_StockLev.log")
                  wScript.Quit
                End If
                wScript.Echo "                Version
(Internal)..."
                Call WriteBuildLog("    Install TPC-C
stored procedures (Version)","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & DMLDirectory & "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

                        Call WriteBuildLog("Install
TPC-C stored procedures (Version)","Step failed! -
Check SP_Version.log")
                  wScript.Quit
                End If
                wScript.Echo FormatDateTime(Now,0) &
" ==> TPC-C stored procedures installed."
                Call WriteBuildLog("TPC-C stored
procedures installed","")
                wScript.Echo ""
End If
If (BuildOption = "full" Or BuildOption = "objectsfull"
Or BuildOption = "bulkload" Or BuildOption =
"bulkloadfull") Then
    wScript.Echo FormatDateTime(Now,0) & " ==>
Setting database options before load..."
                Call WriteBuildLog("Set pre-load
database options (DBOPT1)","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & UtilityDirectory & "dbopt1.sql -
o" & LogDirectory & "Database_Options_1.log")
                Do While oExec.Status = 0
                        wScript.Sleep 100
                Loop
'               rc = CheckSQLOutput(LogDirectory &
"Database_Options_1.log")
'               If rc <> 0 Then
'                       Call WriteBuildLog("Set pre-
load database options (DBOPT1)","Step failed! - Check
Database_Options_1.log")
'                       wScript.Quit
'               End If
                wScript.Echo FormatDateTime(Now,0) &
" ==> Pre-load database options set."
                Call WriteBuildLog("Pre-load database
options set","")
                wScript.Echo ""
    '-------------------------------------------------------
    '--- 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.
    '-------------------------------------------------------
    If
CheckRegKey("HKEY_LOCAL_MACHINE\SOFTWARE\Mi
crosoft\MSSQLServer\Client\SharedMemoryOn") =
True Then
        SharedMemoryRegKey =
WshShell.RegRead("HKEY_LOCAL_MACHINE\SOFTWA
RE\Microsoft\MSSQLServer\Client\SharedMemoryOn")
```

```
                        If SharedMemoryRegKey =
1 Then

                WshShell.RegWrite
"HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSSQL
Server\Client\SharedMemoryOn", 0, "REG_DWORD"
                        End If
                Else
                        SharedMemoryRegKey = 0
                End If
                Call WriteBuildLog("Loading database
and creating indexes","")
                wScript.Echo FormatDateTime(Now,0) &
" ==> Loading database and creating indexes..."
                wScript.Echo FormatDateTime(Now,0) &
" ==> (This runs in a separate, minimized window.)"
                wScript.Echo ""
                CMD_String = ""
                Select Case Platform
                        Case "IA64"
                    CMD_String = SetupDirectory &
"loader\bin\ia64\tpccldr.exe"
                        Case Else
                    CMD_String = SetupDirectory &
"loader\bin\x86\tpccldr.exe"

                End Select
                CMD_String = CMD_String & " -S" &
ServerName
                CMD_String = CMD_String & " -U" &
SQLUserID
                CMD_String = CMD_String & " -P" &
SQLPassword
                CMD_String = CMD_String & " -W" &
NumberWarehouses
                CMD_String = CMD_String & " -f" &
LogDirectory & "bulkload.log"
                CMD_String = CMD_String & " -L" &
LogDirectory
                CMD_String = CMD_String & " -d" &
DDLDirectory
                CMD_String = CMD_String & " -c" &
DatabaseType
    oExec = WshShell.Run(CMD_String, 2, True)
    If oExec <> 0 Then
        wScript.Echo FormatDateTime(Now,0) & " ==>
The TPCCLDR.EXE encountered an error."
        wScript.Echo FormatDateTime(Now,0) & " ==>
Check the TPCCLDR.ERR log file for details."
        wScript.Quit
    End If
    '-------------------------------------------------------
    '--- now that the loader is finished, put the
    '--- SharedMemoryOn registry key back to its
original
    '--- value.
    '-------------------------------------------------------
    If SharedMemoryRegKey = 1 Then
        WshShell.RegWrite
"HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSSQL
Server\Client\SharedMemoryOn", 1, "REG_DWORD"
    End If
                '-------------------------------------------
                '--- set post-load options
                '-------------------------------------------
                wScript.Echo FormatDateTime(Now,0) &
" ==> Setting database options after load..."
                Call WriteBuildLog("Set post-load
database options (DBOPT2)","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & UtilityDirectory & "dbopt2.sql -
o" & LogDirectory & "Database_Options_2.log")
                Do While oExec.Status = 0
                        Loop            wScript.Sleep 100
                rc = CheckSQLOutput(LogDirectory &
"Database_Options_2.log")
                If rc <> 0 Then
                        Call WriteBuildLog("Set
post-load database options
(Database_Options_2)","Step failed! - Check
Database_Options_2.log")
                        wScript.Quit
                End If
                wScript.Echo FormatDateTime(Now,0) &
" ==> Post-load database options set."
                Call WriteBuildLog("Post-load database
options set","")
                wScript.Echo ""
                Call WriteBuildLog("Database load and
index creation complete","")
                wScript.Echo FormatDateTime(Now,0) &
" ==> Database load and index creation complete."
                wScript.Echo ""
    '-------------------------------------------
    '--- 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 FormatDateTime(Now,0) &
" ==> Calculating initial database space usage...."
                Call WriteBuildLog("Calculate TPC-C
initial database space usage","")
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & ACIDDirectory &
"space\scripts\spused.sql -o" & LogDirectory &
"spused.ver")
                Do While oExec.Status = 0
                        wScript.Sleep 100
                Loop
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & ACIDDirectory &
"space\scripts\splog.sql -o" & LogDirectory &
"splog.ver")
                Do While oExec.Status = 0
                        wScript.Sleep 100
                Loop
                Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -i" & ACIDDirectory &
"space\scripts\spfiles.sql -o" & LogDirectory &
"spfiles.ver")
                Do While oExec.Status = 0
                        wScript.Sleep 100
                Loop
                wScript.Echo FormatDateTime(Now,0) &
" ==> Initial database space usage calculated."
                Call WriteBuildLog("TPC-C initial
database space usage calculated","")
                wScript.Echo ""
    '-------------------------------------------
    '--- 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.GetFolder(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 FormatDateTime(Now,0) & " ==>
Creating backup device(s)...."
                Call WriteBuildLog("Creating backup
device(s)","")
    Set oExec = WshShell.Exec("osql -U" & SQLUserID
& " -P" & SQLPassword & " -S" & ServerName & " -e -
i" & DBDirectory & "backupdev.sql -o" & LogDirectory
& "backupdev.log")
    Do While oExec.Status = 0
        wScript.Sleep 100
    Loop

    rc = CheckSQLOutput(LogDirectory &
"backupdev.log")


    If rc <> 0 Then
        Call WriteBuildLog("Creating backup
device(s)","Step failed! - Check backupdev.log")
                wScript.Echo FormatDateTime(Now,0)
& " ==> Backup device(s) creation failed! Check
backupdev.log."
                wScript.Quit
    End If
    wScript.Echo FormatDateTime(Now,0) & " ==>
Backup device(s) created."
                Call WriteBuildLog("Backup device(s)
created","")
    wScript.Echo ""
    wScript.Echo FormatDateTime(Now,0) & " ==>
Backing up TPC-C database...."
                Call WriteBuildLog("Backing up TPC-C
database","")
    Set oExec = WshShell.Exec("osql -U" & SQLUserID
& " -P" & SQLPassword & " -S" & ServerName & " -e -
i" & DBDirectory & "backup.sql -o" & LogDirectory &
"backup.log")
    Do While oExec.Status = 0
        wScript.Sleep 100
    Loop
    rc = CheckSQLOutput(LogDirectory & "backup.log")
    If rc <> 0 Then
        Call WriteBuildLog("Backing up TPC-C
database","Step failed! - Check backup.log")
                wScript.Echo FormatDateTime(Now,0)
& " ==> Database backup failed! Check backup.log."
                wScript.Quit
    End If
    wScript.Echo FormatDateTime(Now,0) & " ==>
Database backup complete."
    wScript.Echo ""
                Call WriteBuildLog("Database backup
complete","")
End If
If (BuildOption = "full" Or BuildOption = "objectsfull"
Or BuildOption = "bulkloadfull") Then
    '-------------------------------------------------
                '--- run a data load verification script
                '-------------------------------------------------
                wScript.Echo FormatDateTime(Now,0) &
" ==> Verify initial TPC-C database load...."
```

```
		Call WriteBuildLog("Verify TPC-C initial
database load","")
		Set oExec = WshShell.Exec("osql -U" &
SQLUserID & " -P" & SQLPassword & " -S" &
ServerName & " -e -w300 -i" & UtilityDirectory &
"VerifyTPCCLoad.sql -o" & LogDirectory &
"VerifyTPCCLoad.log")
		Do While oExec.Status = 0
			wScript.Sleep 100
		Loop
		rc = CheckSQLOutput(LogDirectory &
"VerifyTPCCLoad.log")
   If rc <> 0 Then
      Call WriteBuildLog("Verify TPC-C initial database
load","Step failed! - Check VerifyTPCCLoad.log")
		wScript.Echo FormatDateTime(Now,0)
& " ==> TPC-C database verification failed! Check
VerifyTPCCLoad.log."
		wScript.Quit
   End If
		wScript.Echo FormatDateTime(Now,0) &
" ==> TPC-C initial database load verified."
		Call WriteBuildLog("TPC-C initial
database load verified","")
		wScript.Echo ""
End If
'-------------------------------------------
'--- display banner message
'-------------------------------------------

wScript.Echo
"*****************************************
**********************************"

wScript.Echo "*
*"
wScript.Echo "*  Microsoft TPC-C Benchmark Kit Ver."
& Kit_Version & "                          *"
wScript.Echo "*
*"
wScript.Echo "*  Database Setup Complete
*"
wScript.Echo "*
*"
wScript.Echo
"*****************************************
**********************************"
wScript.Quit
'-----------------------------------------------------
'--- ShowUsage
'-----------------------------------------------------
Function ShowUsage()
	wScript.Echo
"*****************************************
**********************************"
	wScript.Echo "*
*"
	wScript.Echo "*  Microsoft TPC-C Benchmark Kit
Ver." & Kit_Version & "                          *"
	wScript.Echo "*
*"
	wScript.Echo "*  Usage:
*"
	wScript.Echo "*     Optionally, you can pass the
following positional arguments to SETUP *"
	wScript.Echo "*        /S:<Server Name> (can be
""""" for local host)                  *"
	wScript.Echo "*        /U:<SQL Server User ID>
(recommended you use sa)               *"
	wScript.Echo "*        /P:<SQL Sever Account
Password>                              *"
	wScript.Echo "*          (enter BLANK if you do
not have a password defined)          *"
	wScript.Echo "*        /W:<Number of
Warehouses to Build>                   *"
	wScript.Echo "*        /B:<Build Option>
*"	wScript.Echo "*
[full,builddb,objects,objectsfull,bulkload,bulkloadfull,ba
ckup] *"
	wScript.Echo "*        /D:<Database Type>
*"
	wScript.Echo "*          [normal or scale_down]
*"
	wScript.Echo "*        /V:<Verbose\Unattended
Install>                               *"
	wScript.Echo "*          [true or false]
*"
	wScript.Echo "*
*"
	wScript.Echo "*     If you do not pass the
parameters, then you will be prompted for the *"
	wScript.Echo "*     information by the
application.                           *"
	wScript.Echo "*
*"
	wScript.Echo
"*****************************************
**********************************"
	wScript.Quit
End Function
'-----------------------------------------------------
'--- 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.AtEndOfStream <>
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 CREATEDB.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
"Check 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", "3701"
                                        ErrorFlag = 0
                                    Case "15069"
                                        ErrorFlag = 1
                                        wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
                                        wScript.Echo
"One or more users are using the database."
                                        wScript.Echo
"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("%COMPUTERNA
ME%")
                '--- 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("%COMPUTERNA
ME%")
                    TempResponse =
InputBox("Enter your server name:", "TPC-C Setup",
TempServerName)
                Loop
            Case "SQLUserID"
                TempResponse = InputBox("Enter
the SQL Server User ID to use:" & _

Chr(13) & "Note: You must use SQL Authentication for
TPC-C", "TPC-C Setup (V" & Kit_Version & ")", "sa")
                Do While TempResponse = ""
                    rc = MsgBox("You must enter a
valid SQL Server User ID.", 21)
                    If rc = 2 Then
                        wScript.Echo ""
                        wScript.Echo "TPC-C
Setup cancelled by user."
                        wScript.Quit
                    End If
                    TempResponse =
InputBox("Enter the SQL Server User ID to use:",
"TPC-C Setup (V" & Kit_Version & ")", "sa")
                Loop
            Case "SQLPassword"
                TempResponse = InputBox("Enter
the SQL Server password for " & SQLUserID & ": " & _


            Chr(13) & Chr(13) & "NOTE: We strongly
recommend that you do not use a blank password for
the account." & _



            Chr(13) & "If you choose to ignore this
recommendation," & _


            Chr(13) & "then please enter the word
BLANK in lieu of the password.", "TPC-C Setup (V" &
Kit_Version & ")")
                                    If
TempResponse = " " Then

TempResponse = "BLANK"
                                    Else

Do While TempResponse = ""

                    rc = MsgBox("You must enter a
valid SQL Server Password. (Blank is NOT
recommended.)", 21)

                    If rc = 2 Then

                                        wScript.Echo ""

                                        wScript.Echo "TPC-
E Setup cancelled by user."

                                        wScript.Quit

                    End If

                    TempResponse =
InputBox("Enter the SQL Server password for " &
SQLUserID & ": " & _

Chr(13) & Chr(13) & "NOTE: We strongly recommend
that you do not use a blank password for the 'sa'
account." & _

Chr(13) & "If you choose to ignore this
recommendation," & _


Chr(13) & "then please press the spacebar in lieu of
the password.", "TPC-C Setup (V" & Kit_Version & ")")

                    If TempResponse = " " Then

                                        TempResponse =
"BLANK"
                    End If
                Loop
                                        End If
            Case "NumberWarehouses"
                TempResponse = InputBox("Enter
the number of warehouses to build:", "TPC-C Setup
(V" & Kit_Version & ")")
                Do While TempResponse = ""
                    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 warehouses to build:",
"TPC-C Setup (V" & Kit_Version & ")")


                Loop
            Case "BuildOption"
                TempResponse = InputBox("Build
Option:" & Chr(13) &
"(full,builddb,objects,objectsfull,bulkload,bulkloadfull,b
ackup)", "TPC-C Setup (V" & Kit_Version & ")", "full")
                TempResponse =
LCase(TempResponse)
                Flag = 0
                Do While Flag = 0
                    Select Case TempResponse
                        Case "full"
                            'TempResponse =
"full"
                            Flag = 1
                        Case "builddb"
                            'TempResponse =
"builddb"
                            Flag = 1
                        Case "objects"
                            'TempResponse =
"objects"
                            Flag = 1
                        Case "objectsfull"
                            'TempResponse =
"objectsfull"
                            Flag = 1
                        Case "bulkload"
                            'TempResponse =
"bulkload"
                            Flag = 1
                        Case "bulkloadfull"
                            'TempResponse =
"bulkloadfull"
                            Flag = 1
                        Case "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,b
ackup)", , "full")
                                TempResponse =
LCase(TempResponse)
                        End Select
                    Loop

                Case "DatabaseType"
                    TempResponse =
InputBox("Database Type:" & Chr(13) & "(normal or
scale_down)", "TPC-C Setup (V" & Kit_Version & ")",
"normal")
                    TempResponse =
LCase(TempResponse)
                    '--- set flag
                    Flag = 0
                    Do While Flag = 0
                        Select Case TempResponse
                            Case "normal"
                                TempResponse =
"0"
                                Flag = 1
                            Case "scale_down"

                                TempResponse =
"1"
                                Flag = 1
                            Case Else
                                rc = MsgBox("Invalid
Database Type.", 21)
                                If rc = 2 Then
                                    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")
                                TempResponse =
LCase(TempResponse)
                        End Select
                    Loop

                Case "UnattendedBuild"
                    TempResponse =
InputBox("Unattended Build?:" & Chr(13) & "(true or
false)", "TPC-C Setup (V" & Kit_Version & ")", "false")
                    TempResponse =
LCase(TempResponse)
                    '--- set flag
                    Flag = 0
                    Do While TempResponse = ""
                        rc = MsgBox("You must enter
true or false for Unattended Build.", 21)
                        If rc = 2 Then
                            wScript.Echo ""
                            wScript.Echo "TPC-C
Setup cancelled by user."
                            wScript.Quit
                        End If
                        TempResponse =
InputBox("Unattended Build?:" & Chr(13) & "(true or
false)", "TPC-C Setup (V" & Kit_Version & ")", "false")
                        TempResponse =
LCase(TempResponse)
                    Loop
            End Select
            GetUserInput = TempResponse
End Function
'-------------------------------------------
'--- end function
'-------------------------------------------
'-------------------------------------------
'--- subroutine to write BuildLog data
'-------------------------------------------
Sub WriteBuildLog(StepMessage, ErrMessage)
            Set StepLog =
fs.OpenTextFile(BuildStepLogFile, 8, true)
            If LEN(ErrMessage) > 0 Then
                msg =
FormatDateTime(Now,0) & " ==> " & StepMessage &
" : " & ErrMessage
            Else
                msg =
FormatDateTime(Now,0) & " ==> " & StepMessage
            End If
            StepLog.WriteLine (msg)
            StepLog.close
End Sub
'-------------------------------------------
'--- end sub
'-------------------------------------------
'-------------------------------------------------------------
'--- function to check for registry key existence
'-------------------------------------------------------------
Function CheckRegKey(RegStr)

            On Error Resume Next


                WshShell.RegRead RegStr
                If Err Then
                    CheckRegKey
= False
                Else
                    CheckRegKey
= True
                End If
            On Error Goto 0
End Function
'-------------------------------------------
'--- end function
'-------------------------------------------
```

tpcc.h

```
//          File:                   TPCC.H
//
            Microsoft TPC-C Kit Ver. 4.51
//
            Copyright Microsoft, 1996, 1997, 1998,
1999, 2000, 2001, 2002, 2003, 2005
//          Purpose:    Header file for TPC-C
database loader


// Build number of TPC Benchmark Kit
#define TPCKIT_VER      "4.51"

// 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>
#include <math.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.450\\SETUP\\LOGS\\load.o
ut"
#define LOADER_LOG_PATH

            "C:\\MSTPCC.450\\SETUP\\LOGS\\"
#define LOADER_NURAND_C
                        123
#define DEF_STARTING_WAREHOUSE
            1
#define BUILD_INDEX
                        1           // build both
data 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 MAX_O_LEN_NEW_ORDER_ITEMS
15
                #define DIST_INFO_LEN           24
                #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, long 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                     MakeAlphaStringPadded();
int             MakeOriginalAlphaString();
int             MakeNumberString();
int             MakeZipNumberString();
void            InitString();
void            InitAddress();
void            PaddString();
```

tpccldr.c

```
//=================================
=================================
======
//              File:                   TPCCLDR.C
//
                Microsoft TPC-C Kit Ver. 4.51
//
                Copyright Microsoft, 1996, 1997, 1998,
1999,
//
                2000, 2001, 2002, 2003
//              Purpose:        Source file for TPC-C
database loader
//=================================
=================================
======
// Includes
#include "tpcc.h"
#include "search.h"

// Defines
#define MAXITEMS                100000
                100
#define CUSTOMERS_PER_DISTRICT  3000
#define CUSTOMERS_SCALE_DOWN    30
#define DISTRICT_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
#define MAX_SQL_ERRORS
                10

// Functions declarations
void HandleErrorDBC (SQLHDBC  hdbc1);
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 CheckForCommit_Big();
void OpenConnections();
void BuildIndex();
void FormatDate ();

// Shared memory structures
typedef struct
{
                double
                ol;
    long                ol_i_id;
                long
                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;
                long
                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;
```

```
                long
                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;
                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;
HDBC            o_hdbc1;    // for HISTORY
                            // 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;

int                         total_db_errors;

ORDERS_STRUCT
                orders_buf[ORDERS_PER_DISTRICT];
CUSTOMER_STRUCT
                customer_buf[CUSTOMERS_PER_DISTRI
CT];
long
                orders_rows_loaded;
double
                new_order_rows_loaded;
double
                order_line_rows_loaded;
long
                history_rows_loaded;
long
                customer_rows_loaded;
double
                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_district;
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_THREADS; 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);

                printf("Build interface is ODBC.\n");

                if (aptr->build_index == 0)
                        printf("Data load only - no
index creation.\n");
                else
                        printf("Data load and index
creation.\n");

                if (aptr->index_order == 0)
                        printf("Clustered indexes
will be created after bulk load.\n");
                else
                        printf("Clustered indexes
will be created before bulk load.\n");

                // set database scale values
                if (aptr->scale_down == 1)
                {
                        printf("*** Scaled Down
Database ***\n");
                        max_items =
MAXITEMS_SCALE_DOWN;

                        customers_per_district =
CUSTOMERS_SCALE_DOWN;
                        orders_per_district =
ORDERS_SCALE_DOWN;
                        first_new_order = 0;
                        last_new_order  = 30;
                }
                else
                {
                        max_items = MAXITEMS;
                        customers_per_district =
CUSTOMERS_PER_DISTRICT;
                        orders_per_district =
ORDERS_PER_DISTRICT;
                        first_new_order = 2100;
                        last_new_order  = 3000;
                }

                // open connections to SQL Server
```

```
        OpenConnections();

        // open file for loader results
        fLoader = fopen(aptr->loader_res_file,
"w");


   if (fLoader == NULL)
        {
                printf("Error, loader result
file open failed.");
                exit(-1);
        }

   // start loading data
   sprintf(buffer,"TPC-C load started for %ld
warehouses.\n",aptr->num_warehouses);
        if      (aptr->scale_down == 1)
        {
                sprintf(buffer,"SCALED
DOWN DATABASE.\n");
        }

        printf("%s",buffer);
        fprintf(fLoader,"%s",buffer);

        main_time_start = (TimeNow() / MILLI);

        // start parallel load threads
        if (aptr->tables_all || aptr->table_item)
        {
                fprintf(fLoader, "\nStarting
loader threads for: item\n");


                hThread[0] =
CreateThread(NULL,


0,


(LPTHREAD_START_ROUTINE) LoadItem,


NULL,


0,


&dwThreadID[0]);

                if (hThread[0] == NULL)
                {
                        printf("Error,
failed in creating creating thread = 0.\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()
{
   int                  i;
        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(11);
```

```
		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");

		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);
		}

		i = 0;
		rc = bcp_bind(i_hdbc1, (BYTE *) &i_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(i_hdbc1);
		rc = bcp_bind(i_hdbc1, (BYTE *) i_name, 0, I_NAME_LEN, NULL, 0, 0, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(i_hdbc1);
		rc = bcp_bind(i_hdbc1, (BYTE *) &i_price, 0, SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(i_hdbc1);
		rc = bcp_bind(i_hdbc1, (BYTE *) i_data, 0, SQL_VARLEN_DATA, "", 1, 0, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(i_hdbc1);
		rc = bcp_bind(i_hdbc1, (BYTE *) &i_im_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
		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);



		MakeAlphaStringPadded(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_loaded, "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 loads Stock and District as Warehouses are created
//
//================================================================================
void LoadWarehouse()
{
		int			i;
		long		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_street_1, w_street_2, w_city, w_state, w_zip);

		sprintf(name, "%s..%s", aptr->database, "warehouse");

		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);
		}

		i = 0;
		rc = bcp_bind(w_hdbc1, (BYTE *) &w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);
		rc = bcp_bind(w_hdbc1, (BYTE *) &w_ytd, 0, SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);
		rc = bcp_bind(w_hdbc1, (BYTE *) &w_tax, 0, SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);
		rc = bcp_bind(w_hdbc1, (BYTE *) w_name, 0, W_NAME_LEN, NULL, 0, 0, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);
		rc = bcp_bind(w_hdbc1, (BYTE *) w_street_1, 0, ADDRESS_LEN, NULL, 0, 0, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);
		rc = bcp_bind(w_hdbc1, (BYTE *) w_street_2, 0, ADDRESS_LEN, NULL, 0, 0, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);
		rc = bcp_bind(w_hdbc1, (BYTE *) w_city, 0, ADDRESS_LEN, NULL, 0, 0, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);
		rc = bcp_bind(w_hdbc1, (BYTE *) w_state, 0, STATE_LEN, NULL, 0, 0, ++i);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);
		rc = bcp_bind(w_hdbc1, (BYTE *) w_zip, 0, ZIP_LEN, NULL, 0, 0, ++i);
		if (rc != SUCCEED)

			HandleErrorDBC(w_hdbc1);

		time_start = (TimeNow() / MILLI);

		warehouse_rows_loaded = 0;
```

```
        for (w_id = (long)aptr->starting_warehouse; w_id <= aptr->num_warehouses; w_id++)
        {

        MakeAlphaStringPadded(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_hdbc1);
        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()
{
   int              i;
        short       d_id;
        long        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        w_id;
        long        time_start;
        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");

        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);
        }

        i = 0;
        rc = bcp_bind(w_hdbc1, (BYTE *) &d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *) &d_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *) &d_ytd, 0, SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *) &d_next_o_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *) &d_tax, 0, SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *) d_name, 0, D_NAME_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);

        rc = bcp_bind(w_hdbc1, (BYTE *) d_street_1, 0, ADDRESS_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *) d_street_2, 0, ADDRESS_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *) d_city, 0, ADDRESS_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *) d_state, 0, STATE_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *) d_zip, 0, ZIP_LEN, NULL, 0, 0, ++i);
        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 <= aptr->num_warehouses; w_id++)
        {
                d_w_id = w_id;

                for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE; d_id++)
                {

        MakeAlphaStringPadded(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_hdbc1);
        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()
{
        int                     i;
        long        s_i_id;
        long        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");

        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 != SUCCEED)

        HandleErrorDBC(w_hdbc1);
        }

        i = 0;
        rc = bcp_bind(w_hdbc1, (BYTE *)
&s_i_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
&s_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
&s_quantity, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
&s_ytd, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
&s_order_cnt, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
&s_remote_cnt, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_data, 0, SQL_VARLEN_DATA, "", 1, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_dist_01, 0, S_DIST_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_dist_02, 0, S_DIST_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_dist_03, 0, S_DIST_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_dist_04, 0, S_DIST_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_dist_05, 0, S_DIST_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_dist_06, 0, S_DIST_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_dist_07, 0, S_DIST_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_dist_08, 0, S_DIST_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_dist_09, 0, S_DIST_LEN, NULL, 0, 0, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(w_hdbc1);
        rc = bcp_bind(w_hdbc1, (BYTE *)
s_dist_10, 0, S_DIST_LEN, NULL, 0, 0, ++i);
        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 = (long)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 =
MakeOriginalAlphaString(26,50, S_DATA_LEN,
s_data,10);

                        rc =
bcp_sendrow(w_hdbc1);
                        if (rc !=
SUCCEED)

        HandleErrorDBC(w_hdbc1);


        stock_rows_loaded++;

        CheckForCommit_Big(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;
        long
                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];

        // 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");

        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 = (long)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)
                        HandleErrorDBC(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("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");
                }

                // 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\"
> %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()
{
                long    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(customer_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;


                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, long 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_N
URAND_C), c[i].c_last);


                MakeAlphaStringPadded(8,16,FIRST_NA
ME_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;
                                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;


                strcpy(customer_buf[i].c_balance,"-
10.0");

                MakeAlphaStringPadded(300, 500,
C_DATA_LEN, customer_buf[i].c_data);

                        // Generate HISTORY data

                MakeAlphaStringPadded(12, 24,
H_DATA_LEN, customer_buf[i].h_data);
                }
}

//================================
================================
======
//
// Function   : LoadCustomerTable
//
//================================
================================
======
void LoadCustomerTable(LOADER_TIME_STRUCT
*customer_time_start)
{
                long                    i;
    long        c_id;
    short       c_d_id;
                long                    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;
                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;

    i = 0;
                rc = bcp_bind(c_hdbc1, (BYTE *) &c_id,
0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) &c_d_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
                rc = bcp_bind(c_hdbc1, (BYTE *)
&c_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
++i);          if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) &c_discount, 0,
SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
                if (rc != SUCCEED)

                        HandleErrorDBC(c_hdbc1);


    rc = bcp_bind(c_hdbc1, (BYTE *) &c_credit_lim, 0,
SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_last, 0,
LAST_NAME_LEN, NULL, 0, 0, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
                rc = bcp_bind(c_hdbc1, (BYTE *) c_first,
0, FIRST_NAME_LEN, NULL, 0, 0, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_credit, 0,
CREDIT_LEN, NULL, 0, 0, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_balance, 0, 5,
NULL, 0, SQLCHARACTER, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) &c_ytd_payment,
0, SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) &c_payment_cnt,
0, SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *)
&c_delivery_cnt,0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_street_1, 0,
ADDRESS_LEN, NULL, 0, 0, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_street_2, 0,
ADDRESS_LEN, NULL,0,0, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_city, 0,
ADDRESS_LEN, NULL, 0, 0, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_state, 0,
STATE_LEN, NULL, 0, 0, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_zip, 0,
ZIP_LEN, NULL, 0, 0, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_phone, 0,
PHONE_LEN, NULL, 0, 0, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
                rc = bcp_bind(c_hdbc1, (BYTE *)
&c_since, 0, C_SINCE_LEN, NULL, 0, SQLCHARACTER,
++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
                rc = bcp_bind(c_hdbc1, (BYTE *)
c_middle, 0, MIDDLE_NAME_LEN,NULL, 0, 0, ++i);
                if (rc != SUCCEED)
    rc = bcp_bind(c_hdbc1, (BYTE *) c_data, 0,
C_DATA_LEN, NULL, 0, 0, ++i);
                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;
                        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)
{
        long                    i;
   long    c_id;
   short   c_d_id;
        long                    c_w_id;
        double      h_amount;
   char    h_data[H_DATA_LEN+1];
        char
        h_date[H_DATE_LEN+1];
        RETCODE                 rc;

        i = 0;
   rc = bcp_bind(c_hdbc2, (BYTE *) &c_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc2);
   rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc2);
        rc = bcp_bind(c_hdbc2, (BYTE *)
&c_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
++i);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc2);
   rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc2);
        rc = bcp_bind(c_hdbc2, (BYTE *)
&c_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
++i);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc2);
        rc = bcp_bind(c_hdbc2, (BYTE *)
&h_date, 0, H_DATE_LEN, NULL, 0, SQLCHARACTER,
++i);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc2);
   rc = bcp_bind(c_hdbc2, (BYTE *) &h_amount, 0,
SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(c_hdbc2);
   rc = bcp_bind(c_hdbc2, (BYTE *) h_data, 0,
H_DATA_LEN, NULL, 0, 0, ++i);
        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;
        long
                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,
BCPHINTS, (void*) bcphint);
                if (rc != SUCCEED)

        HandleErrorDBC(o_hdbc2);
        }

        sprintf(name, "%s..%s", aptr->database,
"order_line");

        rc = bcp_init(o_hdbc3, name, NULL,
"logs\\ordline.err", DB_IN);
        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 = (long)aptr-
>starting_warehouse; w_id <= aptr-
>num_warehouses; w_id++)
		{
				for (d_id = 1; d_id <=
DISTRICT_PER_WAREHOUSE; d_id++)
				{


		OrdersBufLoad(d_id, w_id);

					// start
parallel loading threads here...
					// start Orders
table thread

		printf("...Loading Order Table for: d_id =
%d, w_id = %d\n", d_id, w_id);

					hThread[0] =
CreateThread(NULL,


		0,


		(LPTHREAD_START_ROUTINE)
LoadOrdersTable,


		&orders_time_start,


		0,


		&dwThreadID[0]);

					if (hThread[0]
== NULL)
					{

		printf("Error, failed in creating creating
thread = 0.\n");

		exit(-1);
					}

					// start
NewOrder table thread

		printf("...Loading New-Order Table for:
d_id = %d, w_id = %d\n", d_id, w_id);

					hThread[1] =
CreateThread(NULL,


		0,


		(LPTHREAD_START_ROUTINE)
LoadNewOrderTable,


		&new_order_time_start,


		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
(CloseHandle(hThread[0]) == FALSE)
					{

		printf("Error, failed in closing Orders
thread handle with errno: %d\n", GetLastError());
					}

					if
(CloseHandle(hThread[1]) == FALSE)
					{

		printf("Error, failed in closing NewOrder
thread handle with errno: %d\n", GetLastError());
					}

					if
(CloseHandle(hThread[2]) == FALSE)
					{

		printf("Error, failed in closing OrderLine
thread handle with errno: %d\n", GetLastError());
					}
				}

		}

		printf("Finished loading orders.\n");

   return;
}

//==============================
==============================
======
//
// Function   : OrdersBufInit
//
// Clears shared buffer for ORDERS, NEWORDER, and
ORDERLINE
//
//==============================
==============================
======
void OrdersBufInit()
{
		int	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
ORDERLINE
//
//================================
================================
======
void OrdersBufLoad(short d_id, long w_id)
{
        int     cust[ORDERS_PER_DISTRICT+1];
        long    o_id;
        long            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_id =
o_id+1;
                orders_buf[o_id].o_c_id =
cust[o_id+1];
                orders_buf[o_id].o_ol_cnt
= (short)RandomNumber(5L, 15L);

                if (o_id < first_new_order)
                {

        orders_buf[o_id].o_carrier_id =
(short)RandomNumber(1L, 10L);

        orders_buf[o_id].o_all_local  = 1;
                }
                else
                {

        orders_buf[o_id].o_carrier_id = 0;

        orders_buf[o_id].o_all_local  = 1;
                }

                for (ol=0;
ol<orders_buf[o_id].o_ol_cnt; ol++)
                {



        orders_buf[o_id].o_ol[ol].ol = ol+1;

        orders_buf[o_id].o_ol[ol].ol_i_id =
RandomNumber(1L, max_items);

        orders_buf[o_id].o_ol[ol].ol_supply_w_id
= w_id;

        orders_buf[o_id].o_ol[ol].ol_quantity =
5;

        MakeAlphaString(24, 24,
OL_DIST_INFO_LEN,
&orders_buf[o_id].o_ol[ol].ol_dist_info);

                                // Generate
ORDER-LINE data
                                if (o_id <
first_new_order)
                                {

        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].o
l_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_delive
ry_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;
        long                            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
   i = 0;
        rc = bcp_bind(o_hdbc1, (BYTE *) &o_id,
0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(o_hdbc1);
   rc = bcp_bind(o_hdbc1, (BYTE *) &o_d_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(o_hdbc1);
        rc = bcp_bind(o_hdbc1, (BYTE *)
&o_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
++i);
        if (rc != SUCCEED)
                HandleErrorDBC(o_hdbc1);
   rc = bcp_bind(o_hdbc1, (BYTE *) &o_c_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(o_hdbc1);
   rc = bcp_bind(o_hdbc1, (BYTE *) &o_carrier_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(o_hdbc1);
   rc = bcp_bind(o_hdbc1, (BYTE *) &o_ol_cnt, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(o_hdbc1);
   rc = bcp_bind(o_hdbc1, (BYTE *) &o_all_local, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
        if (rc != SUCCEED)
                HandleErrorDBC(o_hdbc1);

        rc = bcp_bind(o_hdbc1, (BYTE *)
&o_entry_d, 0, O_ENTRY_D_LEN, NULL, 0,
SQLCHARACTER, ++i);

        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);
   }

        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)
{
                long                    i;
   long       o_id;
   short      o_d_id;
                long                    o_w_id;
                RETCODE                 rc;
                DBINT                   rcint;

                // Bind NEW-ORDER data
                i = 0;
   rc = bcp_bind(o_hdbc2, (BYTE *) &o_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);
   rc = bcp_bind(o_hdbc2, (BYTE *) &o_d_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);
                rc = bcp_bind(o_hdbc2, (BYTE *)
&o_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
++i);
                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_rows_loaded++;


                CheckForCommit_Big(o_hdbc2,
o_hstmt2, new_order_rows_loaded, "new_order",
&new_order_time_start->time_start);
                }

                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) && (aptr->index_order == 0))

                BuildIndex("idxnodcl");
                }
}

//================================
================================
======

//
// Function   : LoadOrderLineTable
//
//================================
================================
======
void LoadOrderLineTable(LOADER_TIME_STRUCT
*order_line_time_start)
{
                long                    i;
                long                    j;
   long       o_id;
                short           o_d_id;
                long                    o_w_id;
                double                  ol;
                long            ol_i_id;
                long
                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
                i = 0;
   rc = bcp_bind(o_hdbc3, (BYTE *) &o_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);
   rc = bcp_bind(o_hdbc3, (BYTE *) &o_d_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);
                rc = bcp_bind(o_hdbc3, (BYTE *)
&o_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);
                rc = bcp_bind(o_hdbc3, (BYTE *) &ol, 0,
SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);
   rc = bcp_bind(o_hdbc3, (BYTE *) &ol_i_id, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT4, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);
                rc = bcp_bind(o_hdbc3, (BYTE *)
&ol_delivery_d, 0, OL_DELIVERY_D_LEN, NULL, 0,
SQLCHARACTER, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);
   rc = bcp_bind(o_hdbc3, (BYTE *) &ol_amount, 0,
SQL_VARLEN_DATA, NULL, 0, SQLFLT8, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);
                rc = bcp_bind(o_hdbc3, (BYTE *)
&ol_supply_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);
   rc = bcp_bind(o_hdbc3, (BYTE *) &ol_quantity, 0,
SQL_VARLEN_DATA, NULL, 0, SQLINT2, ++i);
                if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);
   rc = bcp_bind(o_hdbc3, (BYTE *) ol_dist_info, 0,
DIST_INFO_LEN, NULL, 0, 0, ++i);
                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_delivery_d,orders_buf[i].o_ol[j]
.ol_delivery_d);


                strcpy(ol_dist_info,orders_buf[i].o_ol[j].o
l_dist_info);

                                rc =
bcp_sendrow(o_hdbc3);
                                if (rc !=
SUCCEED)

                HandleErrorDBC(o_hdbc3);


                order_line_rows_loaded++;


                CheckForCommit_Big(o_hdbc3,
o_hstmt3, order_line_rows_loaded, "order_line",
&order_line_time_start->time_start);
                        }
                }

                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("idxodlcl");
		}
}

//================================
================================
======
//
// 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   : CheckForCommit
//
//================================
================================
======
void CheckForCommit(HDBC hdbc,

		HSTMT hstmt,

		long rows_loaded,

		char *table_name,

		long *time_start)
{

   long		time_end, time_diff;

   if ( !(rows_loaded % aptr->batch) )
   {
			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   : CheckForCommit_Big
//
//================================
================================
======
void CheckForCommit_Big(HDBC hdbc,

		HSTMT hstmt,


		double rows_loaded,

		char *table_name,

		long *time_start)
{

   long		time_end, time_diff;

   if ( !(fmod(rows_loaded,aptr->batch) ) )
   {
			time_end = (TimeNow() /
MILLI);
			time_diff = time_end -
*time_start;

			printf("-> Loaded %ld rows
into %s in %ld sec - Total = %.0f (%.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];
		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_hdbc3);

		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*)&szDriverString[0] ,
                        SQL_NTS,

                (SQLCHAR*)&szDriverStringOut[0],
                        sizeof(szDriverStringOut),
                        &cbDriverStringOut,
                        SQL_DRIVER_NOPROMPT
);
                if ( (rc != SUCCEED) &&
                         (rc !=
SQL_SUCCESS_WITH_INFO) )
                {
                        HandleErrorDBC(i_hdbc1);
                        printf("TPC-C Loader
aborted!\n");
                        exit(9);
                }

                // Connection 2
                sprintf( szDriverString , "DRIVER={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)
                        HandleErrorDBC(w_hdbc1);

                rc = SQLDriverConnect ( w_hdbc1,
                                        NULL,

                (SQLCHAR*)&szDriverString[0] ,
                                        SQL_NTS,

                (SQLCHAR*)&szDriverStringOut[0],

                sizeof(szDriverStringOut),

                &cbDriverStringOut,

                SQL_DRIVER_NOPROMPT );

                if ( (rc != SUCCEED) &&
                         (rc !=
SQL_SUCCESS_WITH_INFO) )
                {
                        HandleErrorDBC(w_hdbc1);
                        printf("TPC-C Loader
aborted!\n");
                        exit(9);
                }

                // Connection 3
                sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=
%s" ,
                         aptr->server,
                         aptr->user,
                         aptr->password,
                         aptr->database );

                rc = SQLSetConnectOption (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) &&
                         (rc !=
SQL_SUCCESS_WITH_INFO) )
                {
                        HandleErrorDBC(c_hdbc1);
                        printf("TPC-C Loader
aborted!\n");
                        exit(9);
                }

                // 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) &&
                         (rc !=
SQL_SUCCESS_WITH_INFO) )
                {
                        HandleErrorDBC(c_hdbc2);
                        printf("TPC-C Loader
aborted!\n");
                        exit(9);
                }

                // 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) &&
                         (rc !=
SQL_SUCCESS_WITH_INFO) )
                {
                        HandleErrorDBC(o_hdbc1);
                        printf("TPC-C Loader
aborted!\n");
                        exit(9);
                }

                // 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) &&
                (rc !=
SQL_SUCCESS_WITH_INFO) )
        {
                HandleErrorDBC(o_hdbc2);
                printf("TPC-C Loader
aborted!\n");
                exit(9);
        }

        // Connection 7
        sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=
%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_hdbc3,

                        NULL,


        (SQLCHAR*)&szDriverString[0] ,

                        SQL_NTS,


        (SQLCHAR*)&szDriverStringOut[0],


        sizeof(szDriverStringOut),


        &cbDriverStringOut,


        SQL_DRIVER_NOPROMPT );
        if ( (rc != SUCCEED) &&
                (rc !=
SQL_SUCCESS_WITH_INFO) )
        {
                HandleErrorDBC(o_hdbc3);
                printf("TPC-C Loader
aborted!\n");
                exit(9);
        }
}

//================================
================================
======
//
// Function name: BuildIndex
//
//================================
================================
======
void BuildIndex(char    *index_script)
{
        char    cmd[256];


        printf("Starting 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);
}

//================================
================================
======
//
// Function name: HandleErrorDBC
//
//================================
================================
======
void HandleErrorDBC (SQLHDBC  hdbc1)
{

        SQLCHAR         SqlState[6],
Msg[SQL_MAX_MESSAGE_LENGTH];
        SQLLEN          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(timebuf);
                _strdate(datebuf);

                printf( "[%s : %s]
%s\n==>SQLState: %s\n" , datebuf, timebuf,
szLastError, SqlState);

                strcpy(err_log_path,aptr-
>log_path);

        strcat(err_log_path,"tpccldr.err");
                fp1 =
fopen(err_log_path,"a+");
                if (fp1 == NULL)



        printf("ERROR:  Unable to open errorlog
file.\n");
                else
                {
                        fprintf(fp1,
"[%s : %s] %s\nSQLState: %s\n" , datebuf, timebuf,
szLastError, SqlState);
                        fclose(fp1);
                }

                i++;
        }
}

//================================
================================
======
//
// Function   : HandleErrorSTMT
//
//================================
================================
======
void HandleErrorSTMT (HSTMT  hstmt1)
{
        SQLCHAR         SqlState[6],
Msg[SQL_MAX_MESSAGE_LENGTH];
        SQLLEN          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 )
        {
                if (total_db_errors >=
MAX_SQL_ERRORS)
                {

        printf(">>>>> Maximum SQL errors of
%d exceeded.  Terminating
TPCCLDR.<<<<<\n",total_db_errors);
                        exit(9);
                }
                total_db_errors++;

                sprintf( szLastError , "%s" ,
Msg );

                _strtime(timebuf);
                _strdate(datebuf);

                printf( "[%s : %s]
%s\nSQLState: %s\n" , datebuf, timebuf, szLastError,
SqlState);

                strcpy(err_log_path,aptr-
>log_path);

        strcat(err_log_path,"tpccldr.err");
                fp1 =
fopen(err_log_path,"a+");
                if (fp1 == NULL)

        printf("ERROR:  Unable to open errorlog
file.\n");
                else
                {
                        fprintf(fp1,
"[%s : %s] %s\nSQLState: %s\n" , datebuf, timebuf,
szLastError, SqlState);
                        fclose(fp1);
                }

                i++;
        }
}

//================================
================================
======
//
// Function   : FormatDate
//
//================================
================================
======
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;
}
```

time.c

```
//              File:                   TIME.C
//
                Microsoft TPC-C Kit Ver. 4.62
//
                Copyright Microsoft, 1996, 1997, 1998,
1999, 2000, 2001, 2002, 2005
//              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;
}
```

strings.c

```
//              File:                   STRINGS.C
//
                Microsoft TPC-C Kit Ver. 4.51
//
                Copyright Microsoft, 1996, 1997, 1998,
1999, 2000, 2001, 2002, 2003
//              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);
   MakeAlphaString ( 2,  2, STATE_LEN, state);
   MakeZipNumberString( 9,  9, ZIP_LEN, zip);

#ifdef DEBUG
   printf("[%ld]DBG: MakeAddress: street_1: %s,
street_2: %s, city: %s, state: %s, zip: %s\n",
                                        (int)
GetCurrentThreadId(), street_1, street_2, city, state,
zip);

#endif

   return;

}


//================================
================================
======
//
// Function name: LastName
//
//================================
================================
======

void LastName(int  num,
                                char *name)
{
   static char *n[] =
   {
                        "BAR" , "OUGHT", "ABLE" ,
"PRI"  , "PRES",
                        "ESE" , "ANTI" , "CALLY",
"ATION", "EING"
   };

#ifdef DEBUG
   printf("[%ld]DBG: Entering LastName()\n", (int)
GetCurrentThreadId());
#endif

   if ((num >= 0) && (num < 1000))
   {
                        strcpy(name,
n[(num/100)%10]);
                        strcat(name,
n[(num/10)%10]);
```

```
                        strcat(name,
n[(num/1)%10]);

                        if (strlen(name) <
LAST_NAME_LEN)
                        {

                PaddString(LAST_NAME_LEN, name);
                        }

    }
    else
    {
                        printf("\nError in
LastName()... num <%ld> out of range (0,999)\n",
num);
                        exit(-1);
    }


#ifdef DEBUG
    printf("[%ld]DBG: LastName: num = [%d] ==>
[%d][%d][%d]\n",
                                        (int)
GetCurrentThreadId(), num, num/100, (num/10)%10,
num%10);
                printf("[%ld]DBG: LastName: String =
%s\n", (int) GetCurrentThreadId(), name);
#endif

    return;

}


//================================
================================
======
//
// Function name: MakeAlphaString
//
//================================
================================
======

//philipdu 08/13/96 Changed MakeAlphaString to use
A-Z, a-z, and 0-9 in
//accordance with spec see below:
//The spec says:
//4.3.2.2       The notation random a-string [x .. y]
//(respectively, n-string [x .. y]) represents a string of
random alphanumeric
//(respectively, numeric) characters of a random
length of minimum x, maximum 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 characters".  We are using 8-bit
chars, so this is a non issue.
//It is completely unreasonable to stuff non-printing
chars into the text fields.
//-CLevine 08/13/96

int MakeAlphaString( int  x, int  y, int  z, char *str)
{
                int                     len;
                int                     i;
    char    cc = 'a';
                static          char chArray[] =
"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcde
fghijklmnopqrstuvwxyz";
                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++)
                        str[i] =
chArray[RandomNumber(0,chArrayMax)];
                str[len] = 0;

    return len;
}

int MakeAlphaStringPadded( int  minLen, int  maxLen,
int  padLen, char *str)
{
                int                     len;
                int                     i;
    char    cc = 'a';
                static          char chArray[] =
"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcde
fghijklmnopqrstuvwxyz";
                static          int             chArrayMax =
61;

#ifdef DEBUG
    printf("[%ld]DBG: Entering
MakeAlphaStringPadded()\n", (int)
GetCurrentThreadId());
#endif

                len= RandomNumber(minLen, maxLen);


                for (i=0; i<len; i++)

                        str[i] =
chArray[RandomNumber(0,chArrayMax)];
                if (len < padLen)
                        memset(str+len, ' ', padLen
- len);
                str[padLen] = 0;
    return padLen;
}



//================================
================================
======
//
// 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("MakeOrigianlAlphaString: Invalid
percentage: %d\n", percent);
                        exit(-1);
    }

    // verify string is at least 8 chars in length
    if (x < 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 len;
}


//================================
================================
======
//
// 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, 9999), 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;
    zip[ZIP_LEN+1] = 0;
        memset(zip, ' ', ZIP_LEN+1);
}


//================================
================================
======
//
// 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;
}
```

random.c

```
//              File:                   RANDOM.C
//
                Microsoft TPC-C Kit Ver. 4.62

//
                Copyright Microsoft, 1996, 1997, 1998,
1999, 2000, 2001, 2002, 2005
//              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
repeating.              *
*
*
* 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 for 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("[%ld]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: Entering 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 between %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;
}
```

getargs.c

```
//          File:                   GETARGS.C
//
            Microsoft TPC-C Kit Ver. 4.51
//
            Copyright Microsoft, 1996, 1997, 1998,
1999, 2000, 2001, 2002, 2003
//          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
                        =  LOADER_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 =
TRUE;

            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("-L Loader BCP Log Path
%s\n", LOADER_LOG_PATH);
                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 Build 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("       specify 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);
}
```

B.1 Database Options

DBOPT1.SQL

```
----------------------------------------------------------------
--                                                            --
-- File:   DBOPT1.SQL                                         --
--         Microsoft TPC-C Benchmark Kit Ver. 4.63
--
--         Copyright Microsoft, 2005                          --
--                                                            --
--         Sets database options for load
--
--                                                            --
----------------------------------------------------------------
USE master
GO

ALTER DATABASE tpcc SET RECOVERY BULK_LOGGED
GO

EXEC sp_dboption tpcc,'trunc. log on chkpt.',TRUE
GO

ALTER DATABASE tpcc SET TORN_PAGE_DETECTION
OFF
GO

ALTER DATABASE tpcc SET PAGE_VERIFY NONE
GO

USE tpcc
GO

CHECKPOINT
GO
```

DBOPT2.SQL

```
----------------------------------------------------------------
--                                                            --
-- File:   DBOPT2.SQL                                         --
--         Microsoft TPC-C Benchmark Kit Ver. 4.63
--
--         Copyright Microsoft, 2005                          --
--                                                            --
--         Sets database options after load
--
--                                                            --
----------------------------------------------------------------
ALTER DATABASE tpcc SET RECOVERY FULL
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',
'DisAllowPageLocks',       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_indexoption        'orders',
'DisAllowRowLocks',    TRUE
EXEC sp_indexoption        'new_order',
'DisAllowRowLocks',    TRUE
EXEC sp_indexoption        'item',
'DisAllowRowLocks',    TRUE
EXEC sp_indexoption        'item',
'DisAllowPageLocks',   FALSE
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 Table-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_id('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

DECLARE @db_id  int,
        @tbl_id int

SET     @db_id  = DB_ID('tpcc')
SET     @tbl_id = OBJECT_ID('tpcc..warehouse')
DBCC PINTABLE (@db_id, @tbl_id)

SET     @tbl_id = OBJECT_ID('tpcc..district')
DBCC PINTABLE (@db_id, @tbl_id)

SET     @tbl_id = OBJECT_ID('tpcc..new_order')
DBCC PINTABLE (@db_id, @tbl_id)

SET     @tbl_id = OBJECT_ID('tpcc..item')
DBCC PINTABLE (@db_id, @tbl_id)
GO
```

B.2 Table definitions

Createdb.sql

```
------------------------------------------------------------------------
--                                                                    --
-- File:   CREATEDB.SQL                                               --
--         Microsoft TPC-C Benchmark Kit Ver. 4.60
--
--         Copyright Microsoft, 2005                                  --
--                                                                    --
------------------------------------------------------------------------

SET ANSI_NULL_DFLT_OFF ON
GO

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))
GO

INSERT INTO tpcc_timer VALUES(0,0)
GO

----------------------
-- Store starting time
----------------------
UPDATE  tpcc_timer
SET     start_date          = (SELECT
CONVERT(CHAR(30), GETDATE(), 21))
GO

------------------------------
-- create main database files
------------------------------
CREATE DATABASE tpcc
ON PRIMARY
(               NAME                        = tpccRoot,
                FILENAME    = "g:\tpcc25000.mdf",
                SIZE                        = 8MB,
                FILEGROWTH                  = 0),

FILEGROUP   cs_fg
                (NAME=cs1, FILENAME="g:\mnt\cs\1\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs2, FILENAME="g:\mnt\cs\2\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs3, FILENAME="g:\mnt\cs\3\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs4, FILENAME="g:\mnt\cs\4\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs5, FILENAME="g:\mnt\cs\5\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs6, FILENAME="g:\mnt\cs\6\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs7, FILENAME="g:\mnt\cs\7\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs8, FILENAME="g:\mnt\cs\8\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs9, FILENAME="g:\mnt\cs\9\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs10,
FILENAME="g:\mnt\cs\10\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs11,
FILENAME="g:\mnt\cs\11\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs12,
FILENAME="g:\mnt\cs\12\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs13,
FILENAME="g:\mnt\cs\13\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs14,
FILENAME="g:\mnt\cs\14\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs15,
FILENAME="g:\mnt\cs\15\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs16,
FILENAME="g:\mnt\cs\16\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs17,
FILENAME="g:\mnt\cs\17\",
SIZE=86000MB,FILEGROWTH=0),
                (NAME=cs18,
FILENAME="g:\mnt\cs\18\",
SIZE=86000MB,FILEGROWTH=0),

FILEGROUP   misc_fg
                (NAME=misc1,
FILENAME="g:\mnt\misc\1\",SIZE=48100MB,FILEGRO
WTH=0),
                (NAME=misc2,
FILENAME="g:\mnt\misc\2\",SIZE=48100MB,FILEGRO
WTH=0),
                (NAME=misc3,
FILENAME="g:\mnt\misc\3\",SIZE=48100MB,FILEGRO
WTH=0),
                (NAME=misc4,
FILENAME="g:\mnt\misc\4\",SIZE=48100MB,FILEGRO
WTH=0),
                (NAME=misc5,
FILENAME="g:\mnt\misc\5\",SIZE=48100MB,FILEGRO
WTH=0),
                (NAME=misc6,
FILENAME="g:\mnt\misc\6\",SIZE=48100MB,FILEGRO
WTH=0),
                (NAME=misc7,
FILENAME="g:\mnt\misc\7\",SIZE=48100MB,FILEGRO
WTH=0),

                (NAME=misc8,
FILENAME="g:\mnt\misc\8\",SIZE=48100MB,FILEGRO
WTH=0),
                (NAME=misc9,
FILENAME="g:\mnt\misc\9\",SIZE=48100MB,FILEGRO
WTH=0),
                (NAME=misc10,
FILENAME="g:\mnt\misc\10\",SIZE=48100MB,FILEGR
OWTH=0),
                (NAME=misc11,
FILENAME="g:\mnt\misc\11\",SIZE=48100MB,FILEGR
OWTH=0),
                (NAME=misc12,
FILENAME="g:\mnt\misc\12\",SIZE=48100MB,FILEGR
OWTH=0),
                (NAME=misc13,
FILENAME="g:\mnt\misc\13\",SIZE=48100MB,FILEGR
OWTH=0),
                (NAME=misc14,
FILENAME="g:\mnt\misc\14\",SIZE=48100MB,FILEGR
OWTH=0),   (NAME=misc15,
FILENAME="g:\mnt\misc\15\",SIZE=48100MB,FILEGR
OWTH=0),
                (NAME=misc16,
FILENAME="g:\mnt\misc\16\",SIZE=48100MB,FILEGR
OWTH=0),
                (NAME=misc17,
FILENAME="g:\mnt\misc\17\",SIZE=48100MB,FILEGR
OWTH=0),
                (NAME=misc18,
FILENAME="g:\mnt\misc\18\",SIZE=48100MB,FILEGR
OWTH=0)

LOG ON
(               NAME                        = tpcc_log,
                FILENAME    = "L:",
                SIZE                        = 20000MB,
                FILEGROWTH                  = 0)

COLLATE Latin1_General_BIN
GO

----------------------
-- Store ending time
----------------------
UPDATE  tpcc_timer
SET     end_date            = (SELECT
CONVERT(CHAR(30), GETDATE(), 21))
GO

SELECT  DATEDIFF(second,(SELECT start_date FROM
tpcc_timer),(SELECT end_date FROM tpcc_timer))
GO

--------------------------
-- remove temporary table
--------------------------
IF EXISTS ( SELECT name FROM sysobjects WHERE
name = 'tpcc_timer' )
   DROP TABLE tpcc_timer
GO
```

tables.sql

```
------------------------------------------------------------------------
--                                                                    --

-- File:   TABLES.SQL                                                 --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                                  --
--                                                                    --
--         Creates TPC-C tables                                       --
------------------------------------------------------------------------

SET ANSI_NULL_DFLT_OFF ON
GO

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 history
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            int,
        w_ytd           money,
        w_tax           smallmoney,
        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)
) on misc_fg
go

create table district
(
        d_id            tinyint,
        d_w_id          int,
        d_ytd           money,
        d_next_o_id     int,
        d_tax           smallmoney,
        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)
) on misc_fg
go

create table customer
(
        c_id            int,
        c_d_id          tinyint,
        c_w_id          int,
        c_discount      smallmoney,
        c_credit_lim    money,
        c_last          char(16),
        c_first         char(16),
        c_credit        char(2),
        c_balance       money,
        c_ytd_payment   money,

        c_payment_cnt   smallint,
        c_delivery_cnt  smallint,
        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_middle        char(2),
        c_data          char(500)
) on cs_fg
go

-- Use the following table option if using c_data
varchar(max)
-- sp_tableoption 'customer','large value types out of
row','1'
-- go

create table history
(
        h_c_id          int,
        h_c_d_id        tinyint,
        h_c_w_id        int,
        h_d_id          tinyint,
        h_w_id          int,
        h_date          datetime,
        h_amount        smallmoney,
        h_data          char(24)
) on misc_fg
go

create table new_order
(
        no_o_id         int,
        no_d_id         tinyint,
        no_w_id         int
) on misc_fg
go

create table orders
(
        o_id            int,
        o_d_id          tinyint,
        o_w_id          int,
        o_c_id          int,
        o_carrier_id    tinyint,
        o_ol_cnt        tinyint,
        o_all_local     tinyint,
        o_entry_d       datetime
) on misc_fg

go

create table order_line
(
        ol_o_id         int,
        ol_d_id         tinyint,
        ol_w_id         int,
        ol_number       tinyint,
        ol_i_id         int,
        ol_delivery_d   datetime,
        ol_amount       smallmoney,
        ol_supply_w_id  int,
        ol_quantity     smallint,
        ol_dist_info    char(24)
) on misc_fg
go

create table item
(
        i_id            int,
        i_name          char(24),
        i_price         smallmoney,
        i_data          char(50),
        i_im_id         int
) on misc_fg
go

create table stock
(
        s_i_id          int,
        s_w_id          int,
        s_quantity      smallint,
        s_ytd           int,
        s_order_cnt     smallint,
        s_remote_cnt    smallint,
        s_data          char(50),
        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)
) on cs_fg
go
```

Clustered Index Creation Scripts

```
------------------------------------------------------------------
--                                                              --
-- File:   IDXCUSCL.SQL                                         --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                            --
--                                                              --
--         Creates clustered index on customer table
--
------------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate      DATETIME,
        @enddate        DATETIME

SELECT  @startdate = GETDATE()
SELECT  'Start date:',
        CONVERT(VARCHAR(30),@startdate,21)


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 cs_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
        DATEDIFF(second, @startdate, @enddate)
GO

------------------------------------------------------------------
```

```
--                                                              --
-- File:   IDXDISCL.SQL                                         --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                            --
--                                                              --
--         Creates clustered index on district table
--
------------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate      DATETIME,
        @enddate        DATETIME

SELECT  @startdate = GETDATE()
SELECT  'Start date:',
        CONVERT(VARCHAR(30),@startdate,21)

IF EXISTS ( SELECT name FROM sysindexes WHERE
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 misc_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
        DATEDIFF(second, @startdate, @enddate)
GO

------------------------------------------------------------------
--                                                              --
-- File:   IDXHISCL.SQL                                         --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                            --
--                                                              --
--         Creates clustered index on history table
--
--                                                              --
--         CAUTION: This index is only beneficial for
systems  --
--         CAUTION: with 8 or more processors.
--
--         CAUTION: It may negatively impact
performance on    --
--         CAUTION: systems with less than 8
processors.       --
--                                                              --
------------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate      DATETIME,
        @enddate        DATETIME

SELECT  @startdate = GETDATE()
SELECT  'Start date:',
        CONVERT(VARCHAR(30),@startdate,21)

IF EXISTS ( SELECT name 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 misc_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
        DATEDIFF(second, @startdate, @enddate)
GO


------------------------------------------------------------------
--                                                              --
-- File:   IDXITMCL.SQL                                         --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                            --
--                                                              --
--         Creates clustered index on item table
--
--                                                              --
------------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate      DATETIME,
        @enddate        DATETIME

SELECT  @startdate = GETDATE()
SELECT  'Start date:',
        CONVERT(VARCHAR(30),@startdate,21)

IF EXISTS ( SELECT name FROM sysindexes WHERE
name = 'item_c1' )
    DROP INDEX item.item_c1

CREATE UNIQUE CLUSTERED INDEX item_c1 ON
item(i_id)
    ON misc_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
        DATEDIFF(second, @startdate, @enddate)
GO


------------------------------------------------------------------
--                                                              --
-- File:   IDXNODCL.SQL                                         --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                            --
--                                                              --
--         Creates clustered index on new-order table
--
--                                                              --
------------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate      DATETIME,
        @enddate        DATETIME


SELECT  @startdate = GETDATE()
SELECT  'Start date:',
        CONVERT(VARCHAR(30),@startdate,21)

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 misc_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
        DATEDIFF(second, @startdate, @enddate)
GO

------------------------------------------------------------------
--                                                              --
-- File:   IDXODLCL.SQL                                         --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                            --
--                                                              --
--         Creates clustered index on order-line table
--
--                                                              --
------------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate      DATETIME,
        @enddate        DATETIME

SELECT  @startdate = GETDATE()
SELECT  'Start date:',
        CONVERT(VARCHAR(30),@startdate,21)

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 misc_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
        DATEDIFF(second, @startdate, @enddate)
GO

------------------------------------------------------------------
--                                                              --
-- File:   IDXORDCL.SQL                                         --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                            --
--                                                              --
--         Creates clustered index on orders table
--
--                                                              --
------------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate      DATETIME,
        @enddate        DATETIME

SELECT  @startdate = GETDATE()
SELECT  'Start date:',

        CONVERT(VARCHAR(30),@startdate,21)


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 misc_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
```

```
      DATEDIFF(second, @startdate, @enddate)
GO


-----------------------------------------------------------------
--                                                             --
-- File:   IDXSTKCL.SQL                                        --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                           --
--                                                             --
--         Creates clustered index on stock table
--
--                                                             --
-----------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate        DATETIME,
        @enddate          DATETIME

SELECT  @startdate = GETDATE()
SELECT  'Start date:',
        CONVERT(VARCHAR(30),@startdate,21)

IF EXISTS ( SELECT name FROM sysindexes WHERE
name = 'stock_c1' )
   DROP INDEX stock.stock_c1

CREATE UNIQUE CLUSTERED INDEX stock_c1 ON
stock(s_i_id, s_w_id)
    ON cs_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
        DATEDIFF(second, @startdate, @enddate)
GO

-----------------------------------------------------------------
--                                                             --
-- File:   IDXWARCL.SQL                                        --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                           --
--                                                             --
--         Creates clustered index on warehouse table
--
--                                                             --
-----------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate        DATETIME,
        @enddate          DATETIME

SELECT  @startdate = GETDATE()
SELECT  'Start date:',
        CONVERT(VARCHAR(30),@startdate,21)

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 misc_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
        DATEDIFF(second, @startdate, @enddate)
GO
```

Non Clustered Index Creation Scripts

```
-----------------------------------------------------------------
--                                                             --
-- File:   IDXCUSNC.SQL                                        --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                           --
--                                                             --
--         Creates non-clustered index on customer
table      --
-----------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate        DATETIME,
        @enddate          DATETIME

SELECT  @startdate = GETDATE()
SELECT  'Start date:',
        CONVERT(VARCHAR(30),@startdate,21)

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 cs_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
        DATEDIFF(second, @startdate, @enddate)
GO


-----------------------------------------------------------------
--                                                             --
-- File:   IDXORDNC.SQL                                        --
--         Microsoft TPC-C Benchmark Kit Ver. 4.62
--
--         Copyright Microsoft, 2005                           --
--                                                             --
--         Creates non-clustered index on orders table
--
-----------------------------------------------------------------
USE tpcc
GO

DECLARE @startdate        DATETIME,
        @enddate          DATETIME


SELECT  @startdate = GETDATE()
SELECT  'Start date:',
        CONVERT(VARCHAR(30),@startdate,21)

IF EXISTS ( SELECT name FROM sysindexes WHERE
name = 'orders_nc1' )
   DROP INDEX orders.orders_nc1

CREATE INDEX orders_nc1 ON orders(o_w_id, o_d_id,
o_c_id, o_id)
    ON misc_fg

SELECT  @enddate = GETDATE()
SELECT  'End date:',
        CONVERT(VARCHAR(30),@enddate,21)
SELECT  'Elapsed time (in seconds): ',
        DATEDIFF(second, @startdate, @enddate)
GO
```

B.3 Stored Procedures

Create_NewOrd.sql

```
-----------------------------------------------------------------
--                                                             --
-- File:   NEWORD.SQL                                          --
--         Microsoft TPC-C Benchmark Kit Ver. 4.63
--
--         Copyright Microsoft, 2005                           --
--                                                             --
--         Creates neworder stored procedure
--
--                                                             --
--         Interface Level:    4.20.000                        --
--                                                             --
-----------------------------------------------------------------
SET QUOTED_IDENTIFIER OFF
GO

SET ANSI_NULLS ON
GO

USE tpcc
GO

IF EXISTS ( SELECT name FROM sysobjects WHERE
name = 'tpcc_neworder' )
   DROP PROCEDURE tpcc_neworder
GO

CREATE PROCEDURE    tpcc_neworder
                    @w_id           int,
                    @d_id           tinyint,
                    @c_id           int,
                    @o_ol_cnt       tinyint,
                    @o_all_local    tinyint,
                    @i_id1  int = 0, @s_w_id1  int = 0,
@ol_qty1  smallint = 0,
                    @i_id2  int = 0, @s_w_id2  int = 0,
@ol_qty2  smallint = 0,
                    @i_id3  int = 0, @s_w_id3  int = 0,
@ol_qty3  smallint = 0,
                    @i_id4  int = 0, @s_w_id4  int = 0,
@ol_qty4  smallint = 0,

                    @i_id5  int = 0, @s_w_id5  int = 0,
@ol_qty5  smallint = 0,
                    @i_id6  int = 0, @s_w_id6  int = 0,
@ol_qty6  smallint = 0,
                    @i_id7  int = 0, @s_w_id7  int = 0,
@ol_qty7  smallint = 0,
                    @i_id8  int = 0, @s_w_id8  int = 0,
@ol_qty8  smallint = 0,
```

```
                @i_id9  int = 0, @s_w_id9  int = 0,
@ol_qty9  smallint = 0,
                @i_id10 int = 0, @s_w_id10 int = 0,
@ol_qty10 smallint = 0,
                @i_id11 int = 0, @s_w_id11 int = 0,
@ol_qty11 smallint = 0,
                @i_id12 int = 0, @s_w_id12 int = 0,
@ol_qty12 smallint = 0,
                @i_id13 int = 0, @s_w_id13 int = 0,
@ol_qty13 smallint = 0,
                @i_id14 int = 0, @s_w_id14 int = 0,
@ol_qty14 smallint = 0,
                @i_id15 int = 0, @s_w_id15 int = 0,
@ol_qty15 smallint = 0



AS
DECLARE @w_tax          smallmoney,
        @d_tax          smallmoney,
        @c_last         char(16),
        @c_credit       char(2),
        @c_discount     smallmoney,
        @i_price        smallmoney,
        @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      int,
        @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 WITH (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,
                                    'dec 31, 1899',
                                    @i_price * @li_qty,
                                    @li_s_w_id,
                                    @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 WITH (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,
                               0,
                               @o_ol_cnt,
                               @o_all_local,
                               @o_entry_d)

------------------------------------------------
-- 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 WITH (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

SET QUOTED_IDENTIFIER OFF
GO

SET ANSI_NULLS ON
GO
```

Tpcc_neworder_new.sql

```
-----------------------------------------------------------------------
--                                                                   --
-- File:   TPCC_NEWORDER_NEW.SQL
--
--         Microsoft TPC-C Benchmark Kit Ver. 4.63
--
--         Copyright Microsoft, 2005                                 --
--                                                                   --
--         This acid stored procedure implements the
neworder  --
--         transaction.  It outputs timestamps at the
--
--         beginning of the transaction, before the
commit  delay, and after the commit.                  -
-
--                                                                   --
-----------------------------------------------------------------------
SET QUOTED_IDENTIFIER OFF
GO
SET ANSI_NULLS OFF
GO

USE tpcc
GO

IF EXISTS ( SELECT name FROM sysobjects WHERE
name = 'tpcc_neworder_new' )
   DROP PROCEDURE tpcc_neworder_new
GO

-- neworder_new v2.5 6/23/05 PeterCa
-- 1q stock/order_line/client.  upd district & ins
neworder.
--  cust/warehouse select together, ins order separate
--  uses rownumber to distinct w any transform
--  uses in-memory sort for distinct on iid,wid
--  uses charindex
-- will rollback if (@i_idX,@s_w_idX pairs not unique)
OR (@i_idX not unique).

CREATE PROCEDURE    tpcc_neworder_new
                    @w_id           int,
                    @d_id           tinyint,
                    @c_id           int,
                    @o_ol_cnt       tinyint,
                    @o_all_local    tinyint,
                    @i_id1  int = 0, @s_w_id1  int = 0,
@ol_qty1  smallint = 0,
                    @i_id2  int = 0, @s_w_id2  int = 0,
@ol_qty2  smallint = 0,
                    @i_id3  int = 0, @s_w_id3  int = 0,
@ol_qty3  smallint = 0,
                    @i_id4  int = 0, @s_w_id4  int = 0,
@ol_qty4  smallint = 0,
                    @i_id5  int = 0, @s_w_id5  int = 0,
@ol_qty5  smallint = 0,
                    @i_id6  int = 0, @s_w_id6  int = 0,
@ol_qty6  smallint = 0,
                    @i_id7  int = 0, @s_w_id7  int = 0,
@ol_qty7  smallint = 0,
                    @i_id8  int = 0, @s_w_id8  int = 0,
@ol_qty8  smallint = 0,
                    @i_id9  int = 0, @s_w_id9  int = 0,
@ol_qty9  smallint = 0,
                    @i_id10 int = 0, @s_w_id10 int = 0,
@ol_qty10 smallint = 0,
                    @i_id11 int = 0, @s_w_id11 int = 0,
@ol_qty11 smallint = 0,
                    @i_id12 int = 0, @s_w_id12 int = 0,
@ol_qty12 smallint = 0,
                    @i_id13 int = 0, @s_w_id13 int = 0,
@ol_qty13 smallint = 0,
                    @i_id14 int = 0, @s_w_id14 int = 0,
@ol_qty14 smallint = 0,
                    @i_id15 int = 0, @s_w_id15 int = 0,
@ol_qty15 smallint = 0



AS
BEGIN
DECLARE @o_id           int,
        @d_tax          smallmoney,

        @o_entry_d      datetime,

        @commit_flag    tinyint

BEGIN TRANSACTION n
    -- get district tax and next availible order id and
update
    -- insert corresponding row into new-order table
    -- 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(),
            @commit_flag    = 1
    OUTPUT  deleted.d_next_o_id,
            @d_id,
            @w_id
    INTO    new_order
    WHERE   d_w_id          = @w_id AND
            d_id            = @d_id

    -- update stock from stock join (item join (params))
    -- output to orderline, output to client
    -- NOTE: @@rowcount != @ol_o_cnt
    --           if (@i_idX,@s_w_idX pairs not unique)
OR (@i_idX not unique).

    UPDATE  stock
    SET     s_ytd           = s_ytd + info.ol_qty,
            s_quantity      = s_quantity - info.ol_qty +
                              CASE WHEN (s_quantity -
info.ol_qty < 10) THEN 91 ELSE 0 END,
            s_order_cnt     = s_order_cnt + 1,
            s_remote_cnt    = s_remote_cnt +

CASE WHEN (info.w_id = @w_id) THEN 0 ELSE 1 END

    OUTPUT  @o_id,
            @d_id,
            @w_id,
            info.lino,
            info.i_id,
            "dec 31, 1899",
                    info.i_price * info.ol_qty,
                    info.w_id,
            info.ol_qty,
            CASE    @d_id   WHEN 1  THEN
inserted.s_dist_01
                    WHEN 2  THEN inserted.s_dist_02
                    WHEN 3  THEN inserted.s_dist_03
                    WHEN 4  THEN inserted.s_dist_04
                    WHEN 5  THEN inserted.s_dist_05
                    WHEN 6  THEN inserted.s_dist_06
                    WHEN 7  THEN inserted.s_dist_07
                    WHEN 8  THEN inserted.s_dist_08
                    WHEN 9  THEN inserted.s_dist_09
                    WHEN 10 THEN inserted.s_dist_10
            END
    INTO    order_line

    OUTPUT  info.i_name,inserted.s_quantity,
            CASE WHEN
((charindex("ORIGINAL",info.i_data) > 0) AND

(charindex("ORIGINAL",inserted.s_data) > 0) )
                THEN "B" ELSE "G" END,
            info.i_price,
            info.i_price*info.ol_qty
    FROM    stock INNER JOIN
            (SELECT iid,
                    wid,
                            lino,
                    ol_qty,
                    i_price,

                    i_name,
```

```
            i_data
        FROM   (SELECT iid,
                       wid,
                       lino,
                       qty,

row_number() OVER (PARTITION BY iid,wid ORDER
BY iid,wid)
                 FROM   (SELECT
@i_id1,@s_w_id1,1,@ol_qty1      UNION ALL
                       SELECT
@i_id2,@s_w_id2,2,@ol_qty2      UNION ALL
                       SELECT
@i_id3,@s_w_id3,3,@ol_qty3      UNION ALL
                       SELECT
@i_id4,@s_w_id4,4,@ol_qty4      UNION ALL
                       SELECT
@i_id5,@s_w_id5,5,@ol_qty5      UNION ALL
                       SELECT
@i_id6,@s_w_id6,6,@ol_qty6      UNION ALL
                       SELECT
@i_id7,@s_w_id7,7,@ol_qty7      UNION ALL
                       SELECT
@i_id8,@s_w_id8,8,@ol_qty8      UNION ALL
                       SELECT
@i_id9,@s_w_id9,9,@ol_qty9      UNION ALL
                       SELECT
@i_id10,@s_w_id10,10,@ol_qty10  UNION ALL
                       SELECT
@i_id11,@s_w_id11,11,@ol_qty11  UNION ALL
                       SELECT
@i_id12,@s_w_id12,12,@ol_qty12  UNION ALL
                       SELECT
@i_id13,@s_w_id13,13,@ol_qty13  UNION ALL
                       SELECT
@i_id14,@s_w_id14,14,@ol_qty14  UNION ALL
                       SELECT
@i_id15,@s_w_id15,15,@ol_qty15) AS
uo1(iid,wid,lino,qty)
                                ) AS
o1(iid,wid,lino,ol_qty,rownum)
                       INNER JOIN
                       item (repeatableread) ON i_id   =
iid  AND -- filters out invalid items
                                          rownum = 1
             ) AS
info(i_id,w_id,lino,ol_qty,i_price,i_name,i_data)
          ON  s_i_id  = info.i_id AND
              s_w_id  = info.w_id

   IF (@@rowcount <> @o_ol_cnt)  -- must have an
invalid item
      SELECT  @commit_flag = 0  -- 2.4.2.3 requires
rest to proceed

   --  insert fresh row into orders table
   INSERT INTO orders VALUES   (   @o_id,
                                   @d_id,
                                   @w_id,
                                   @c_id,
                                   0,
                                   @o_ol_cnt,
                                   @o_all_local,
                                   @o_entry_d)

   --  get customer last name, discount, and credit
rating
   --  get warehouse tax
   -- return order_data to client

   SELECT  w_tax,
           @d_tax,
           @o_id,
           c_last,
           c_discount,
           @o_entry_d,
           c_credit,
           @commit_flag
   FROM    warehouse(repeatableread),
           customer(repeatableread)
   WHERE   w_id    = @w_id AND
           c_id    = @c_id AND
           c_w_id  = @w_id AND
           c_d_id  = @d_id

                -- @@rowcount checks that previous
select found a valid customer
   IF ((@commit_flag = 1) AND (@@rowcount = 1))
      COMMIT TRANSACTION n
   ELSE    -- all that work for nothing.
      ROLLBACK TRANSACTION  n

END
GO
```

OrdStat.sql

```
------------------------------------------------------------------------
--                                                                    --
-- File:   ORDSTAT.SQL                                                --
--         Microsoft TPC-C Benchmark Kit Ver. 4.63
--
--         Copyright Microsoft, 2005                                  --
--                                                                    --
--         Creates order status stored procedure
--
--                                                                    --
--         Interface Level:    4.20.000                               --
--                                                                    --
------------------------------------------------------------------------
SET QUOTED_IDENTIFIER OFF
GO

SET ANSI_NULLS ON
GO

USE tpcc
GO

IF EXISTS ( SELECT name FROM sysobjects WHERE
name = 'tpcc_orderstatus' )
   DROP PROCEDURE tpcc_orderstatus
GO

CREATE PROCEDURE    tpcc_orderstatus
                    @w_id       int,
                    @d_id       tinyint,


                    @c_id       int,
                    @c_last     char(16) = ''

AS
DECLARE @c_balance      money,
        @c_first        char(16),
        @c_middle       char(2),
        @o_id           int,
        @o_entry_d      datetime,
        @o_carrier_id   smallint,
        @cnt            smallint

BEGIN TRANSACTION o

IF (@c_id = 0)
BEGIN
   ----------------------------------------------
   --  get customer id and info using last name
   ----------------------------------------------
   SELECT  @cnt    = (count(*)+1)/2
   FROM    customer WITH (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 WITH (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 WITH (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 WITH (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 WITH (repeatableread)
WHERE   ol_o_id = @o_id AND
```

```
        ol_d_id = @d_id AND
        ol_w_id = @w_id

    custnotfound:

    COMMIT TRANSACTION 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
```

delivery.sql

```
-----------------------------------------------------------------------
--                                                                   --
-- File:   DELIVERY.SQL                                              --
--         Microsoft TPC-C Benchmark Kit Ver. 4.63
--
--         Copyright Microsoft, 2005                                 --
--                                                                   --
--         Creates delivery stored procedure
--
--                                                                   --
--         Interface Level:    4.20.000                              --
--                                                                   --
-----------------------------------------------------------------------
SET QUOTED_IDENTIFIER OFF
GO

SET ANSI_NULLS ON
GO

USE tpcc
GO

IF EXISTS ( SELECT name FROM sysobjects WHERE
name = 'tpcc_delivery' )
    DROP PROCEDURE tpcc_delivery
GO

CREATE PROC tpcc_delivery
            @w_id           int,

            @o_carrier_id   smallint

AS

DECLARE @d_id       tinyint,
        @o_id       int,
        @c_id       int,
        @total      money,
        @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 TRANSACTION 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 WITH  (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 TRANSACTION d


-- return delivery data to client

SELECT  @oid1,
        @oid2,
        @oid3,
        @oid4,
        @oid5,
        @oid6,
        @oid7,
        @oid8,
        @oid9,
        @oid10
GO

SET QUOTED_IDENTIFIER OFF
GO

SET ANSI_NULLS ON
GO
```

createpaymentproc.sql

```
-----------------------------------------------------------------------
--                                                                   --
-- File:   PAYMENT.SQL                                               --
--         Microsoft TPC-C Benchmark Kit Ver. 4.63
--
--         Copyright Microsoft, 2005                                 --
--                                                                   --
--         Creates payment stored procedure
--
--                                                                   --
--         Interface Level:    4.20.000                              --
--                                                                   --
-----------------------------------------------------------------------
SET QUOTED_IDENTIFIER OFF
GO

SET ANSI_NULLS ON
GO

USE tpcc
GO

IF EXISTS ( SELECT name FROM sysobjects WHERE
name = 'tpcc_payment' )
    DROP PROCEDURE tpcc_payment
GO

CREATE PROCEDURE    tpcc_payment
                    @w_id       int,
                    @c_w_id     int,
                    @h_amount   smallmoney,
                    @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_zip          char(9),
        @c_phone        char(16),
        @c_since        datetime,
        @c_credit       char(2),
        @c_credit_lim   money,
        @c_balance      money,
        @c_discount     smallmoney,
        @c_data         char(42),
        @datetime       datetime,
        @w_ytd          money,
        @d_ytd          money,
        @cnt            smallint,
        @val            smallint,
        @screen_data    char(200),
        @d_id_local     tinyint,
        @w_id_local     int,
        @c_id_local     int

SELECT  @screen_data    = ""

BEGIN TRANSACTION 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 WITH (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 @val

        SELECT  @c_id   = c_id
        FROM    customer WITH (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,
            @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)

        -- update customer info
        UPDATE  customer
        SET     c_data          = @c_data +
substring(c_data, 1, 458),
                @screen_data    = @c_data +
substring(c_data, 1, 158)
        WHERE   c_id            = @c_id AND
                c_w_id          = @c_w_id AND
                c_d_id          = @c_d_id
    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 and 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 TRANSACTION 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

SET QUOTED_IDENTIFIER OFF
GO

SET ANSI_NULLS ON
GO
```

createstocklevproc.sql

```
------------------------------------------------------------------------
--                                                                    --
-- File:   STOCKLEV.SQL                                               --
--         Microsoft TPC-C Benchmark Kit Ver. 4.63
--
--         Copyright Microsoft, 2005                                  --
--                                                                    --
--         Creates stock level stored procedure
--
--                                                                    --
--         Interface Level:    4.20.000                               --
--                                                                    --
------------------------------------------------------------------------
SET QUOTED_IDENTIFIER OFF
GO


SET ANSI_NULLS ON
GO

USE tpcc
GO

IF EXISTS ( SELECT name FROM sysobjects WHERE
name = 'tpcc_stocklevel' )
    DROP PROCEDURE tpcc_stocklevel
GO

CREATE PROCEDURE    tpcc_stocklevel
```

```
                @w_id           int,
                @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
OPTION(ORDER GROUP)
GO

SET QUOTED_IDENTIFIER OFF
GO

SET ANSI_NULLS ON
GO
```

Appendix C Tunable Parameters

Disabled Windows Services

Alerter
Application Experience Lookup Service
Automatic Updates
ClipBook
Distributed Link Tracking Client
Emulex HBAnywhere
Emulex HBAnywhere SvcMgr
Help and Support
IMAPI CD-Burning COM Service
Indexing Service
Intersite Messaging
Kerberos Key Distribution Center
License Logging Service
Messenger
Network DDE
Network DDE DSDM
ONC/RPC Portmapper
Remote Registry
Routing and Remote Access
Secondary Logon
SNMP Service
SQLServer Active Directory Helper
SQL Server Browser
Telnet
Terminal Services Session Directory
WebClient
Windows Audio
Windows Firewall/Internet Connection Sharing (ICS)
Windows Image Acquisition
Wireless Configuration

Server System Configuratiopn

System Information report written at: 03/06/06 16:06:56
System Name: SQLDIABLO
[System Summary]

Item Value
OS Name Microsoft(R) Windows(R) Server 2003, Enterprise Edition for 64-Bit Itanium-based Systems
Version 5.2.3790 Service Pack 1 Build 3790

Other OS Description Not Available
OS Manufacturer Microsoft Corporation

System Name SQLDIABLO
System Manufacturer hp
System Model server rx4640

System Type Itanium (TM) -based System
Processor ia64 Family 32 Model 0 Stepping 4 GenuineIntel ~1600 Mhz
Processor ia64 Family 32 Model 0 Stepping 4 GenuineIntel ~1600 Mhz
Processor ia64 Family 32 Model 0 Stepping 4 GenuineIntel ~1600 Mhz
Processor ia64 Family 32 Model 0 Stepping 4 GenuineIntel ~1600 Mhz
Processor ia64 Family 32 Model 0 Stepping 4 GenuineIntel ~1600 Mhz
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Processor ia64 Family 32 Model 0 Stepping 4 GenuineIntel ~1600 Mhz
Processor ia64 Family 32 Model 0 Stepping 4 GenuineIntel ~1600 Mhz
Processor ia64 Family 32 Model 0 Stepping 4 GenuineIntel ~1600 Mhz
Processor ia64 Family 32 Model 0 Stepping 4 GenuineIntel ~1600 Mhz
BIOS Version/Date HP 72.63, 12/8/2005

SMBIOS Version 2.3
Windows Directory C:\windows
System Directory C:\windows\system32

Boot Device \Device\HarddiskVolume1
Locale United States
Hardware Abstraction Layer Version = "5.2.3790.1830 (srv03_sp1_rtm.050324-1447)"

User Name Not Available
Time Zone Pacific Standard Time
Total Physical Memory 131,041.61 MB

Available Physical Memory 124.36 GB
Total Virtual Memory 127.89 GB
Available Virtual Memory 126.06 GB
Page File Space 2.00 GB
Page File C:\pagefile.sys

[Hardware Resources]

[Conflicts/Sharing]

Resource Device
I/O Port 0x0000A000-0x0000BFFF PCI bus

I/O Port 0x0000A000-0x0000BFFF QLogic Fibre Channel Adapter

I/O Port 0x00002000-0x00003FFF PCI bus

I/O Port 0x00002000-0x00003FFF LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device

Memory Address 0x80000000-0x8FFFFFFF PCI bus

Memory Address 0x80000000-0x8FFFFFFF RADEON 7000 SERIES

Memory Address 0xA0000-0xFFFFF PCI bus

Memory Address 0xA0000-0xFFFFF RADEON 7000 SERIES

I/O Port 0x00004000-0x00007FFF PCI bus

I/O Port 0x00004000-0x00007FFF QLogic Fibre Channel Adapter

I/O Port 0x0000C000-0x0000FFFF PCI bus

I/O Port 0x0000C000-0x0000FFFF QLogic Fibre Channel Adapter

I/O Port 0x00008000-0x00009FFF PCI bus

I/O Port 0x00008000-0x00009FFF QLogic Fibre Channel Adapter

[DMA]

Resource Device Status

[Forced Hardware]

Device PNP Device ID

[I/O]

Resource Device Status
0x00000000-0x00001FFF PCI bus OK

0x00000E18-0x00000E1F CMD PCI-0649 Ultra DMA IDE Controller OK
0x00000E24-0x00000E27 CMD PCI-0649 Ultra DMA IDE Controller OK
0x00000E10-0x00000E17 CMD PCI-0649 Ultra DMA IDE Controller OK
0x00000E20-0x00000E23 CMD PCI-0649 Ultra DMA IDE Controller OK
0x00000E00-0x00000E0F CMD PCI-0649 Ultra DMA IDE Controller OK
0x00000D00-0x00000DFF RADEON 7000 SERIES OK
0x000003B0-0x000003BB RADEON 7000 SERIES OK
0x000003C0-0x000003DF RADEON 7000 SERIES OK
0x00002000-0x00003FFF PCI bus OK

0x00002000-0x00003FFF LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device OK

0x00002100-0x000021FF LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device OK

0x00002240-0x0000227F Intel(R) PRO/1000 MT Dual Port Server Adapter OK
0x00002200-0x0000223F Intel(R) PRO/1000 MT Dual Port Server Adapter #2 OK

0x00004000-0x00007FFF PCI bus OK

0x00004000-0x00007FFF QLogic Fibre Channel Adapter OK
0x00004100-0x000041FF QLogic Fibre Channel Adapter OK
0x00008000-0x00009FFF PCI bus OK

0x00008000-0x00009FFF QLogic Fibre Channel Adapter OK

0x00008300-0x000083FF Emulex LightPulse LP1050, PCI Slot 3, Storport Miniport Driver OK

0x00008100-0x000081FF QLogic Fibre Channel Adapter OK
0x0000A000-0x0000BFFF PCI bus OK

0x0000A000-0x0000BFFF QLogic Fibre Channel Adapter OK
0x0000A300-0x0000A3FF QLogic Fibre Channel Adapter OK
0x0000A200-0x0000A2FF QLogic Fibre Channel Adapter OK
0x0000A100-0x0000A1FF QLogic Fibre Channel Adapter OK
0x0000C000-0x0000FFFF PCI bus OK

0x0000C000-0x0000FFFF QLogic Fibre Channel Adapter OK
0x0000C100-0x0000C1FF QLogic Fibre Channel Adapter OK

[IRQs]

Resource Device Status
IRQ 20 Microsoft ACPI-Compliant System OK
IRQ 16 HP MP Serial AUX/UPS Port (COM3) OK
IRQ 17 NEC PCI to USB Open Host Controller OK
IRQ 18 NEC PCI to USB Open Host Controller OK
IRQ 23 NEC PCI to USB Enhanced Host Controller (B1) OK
IRQ 21 CMD PCI-0649 Ultra DMA IDE Controller OK
IRQ 22 RADEON 7000 SERIES OK

IRQ 27 LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device OK

IRQ 28 LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device OK

IRQ 31 Intel(R) PRO/1000 MT Dual Port Server Adapter OK
IRQ 32 Intel(R) PRO/1000 MT Dual Port Server Adapter #2 OK
IRQ 38 QLogic Fibre Channel Adapter OK
IRQ 39 QLogic Fibre Channel Adapter OK
IRQ 53 Emulex LightPulse LP1050, PCI Slot 3, Storport Miniport Driver OK
IRQ 49 QLogic Fibre Channel Adapter OK
IRQ 50 QLogic Fibre Channel Adapter OK
IRQ 64 QLogic Fibre Channel Adapter OK
IRQ 65 QLogic Fibre Channel Adapter OK
IRQ 60 QLogic Fibre Channel Adapter OK
IRQ 61 QLogic Fibre Channel Adapter OK
IRQ 71 QLogic Fibre Channel Adapter OK
IRQ 72 QLogic Fibre Channel Adapter OK

[Memory]

Resource Device Status

0xFF5B0000-0xFF5B0003 HP Baseboard Management Controller Interface Driver OK

0xA0000-0xFFFFF PCI bus OK

0xA0000-0xFFFFF RADEON 7000 SERIES OK
0x80000000-0x8FFFFFFF PCI bus OK

0x80000000-0x8FFFFFFF RADEON 7000 SERIES OK
0x84054000-0x8405400F HP MP Serial AUX/UPS Port (COM3) OK
0x84053000-0x84053FFF HP Management Processor OK
0x84020000-0x8403FFFF HP Management Processor OK
0x84052000-0x84052FFF NEC PCI to USB Open Host Controller OK
0x84051000-0x84051FFF NEC PCI to USB Open Host Controller OK
0x84050000-0x840500FF NEC PCI to USB Enhanced Host Controller (B1) OK

0x84040000-0x8404FFFF RADEON 7000 SERIES OK
0x90000000-0x9FFFFFFF PCI bus OK

0x90185000-0x901853FF LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device OK

0x90182000-0x90183FFF LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device OK

0x90184000-0x901843FF LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device OK

0x90180000-0x90181FFF LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device OK

0x90120000-0x9013FFFF Intel(R) PRO/1000 MT Dual Port Server Adapter OK
0x900C0000-0x900FFFFF Intel(R) PRO/1000 MT Dual Port Server Adapter OK
0x90100000-0x9011FFFF Intel(R) PRO/1000 MT Dual Port Server Adapter #2 OK

0x90040000-0x9007FFFF Intel(R) PRO/1000 MT Dual Port Server Adapter #2 OK

0xA0000000-0xBFFFFFFF PCI bus OK

0xA0041000-0xA0041FFF QLogic Fibre Channel Adapter OK
0xA0040000-0xA0040FFF QLogic Fibre Channel Adapter OK
0xC0000000-0xCFFFFFFF PCI bus OK

0xC0045000-0xC0045FFF Emulex LightPulse LP1050, PCI Slot 3, Storport Miniport Driver OK
0xC0044000-0xC00440FF Emulex LightPulse LP1050, PCI Slot 3, Storport Miniport Driver OK
0xC0041000-0xC0041FFF QLogic Fibre Channel Adapter OK
0xC0040000-0xC0040FFF QLogic Fibre Channel Adapter OK
0xD0000000-0xDFFFFFFF PCI bus OK

0xD0083000-0xD0083FFF QLogic Fibre Channel Adapter OK
0xD0082000-0xD0082FFF QLogic Fibre Channel Adapter OK

0xD0081000-0xD0081FFF QLogic Fibre Channel Adapter OK

0xD0080000-0xD0080FFF QLogic Fibre Channel Adapter OK
0xE0000000-0xFDFFFFFF PCI bus OK

0xE0041000-0xE0041FFF QLogic Fibre Channel Adapter OK
0xE0040000-0xE0040FFF QLogic Fibre Channel Adapter OK

[Components]

[Multimedia]

[Audio Codecs]

CODEC Manufacturer Description Status
File Version Size
Creation Date
c:\windows\system32\msg711.acm
Microsoft Corporation
OK
C:\windows\system32\MSG711.ACM
5.2.3790.0 (srv03_rtm.030324-2048)
33.00 KB (33,792 bytes)
4/8/2004 1:48 PM
c:\windows\system32\tssoft32.acm DSP GROUP, INC. OK
C:\windows\system32\TSSOFT32.ACM
1.01 29.00 KB (29,696 bytes)
4/8/2004 1:49 PM
c:\windows\system32\msgsm32.acm
Microsoft Corporation
OK
C:\windows\system32\MSGSM32.ACM
5.2.3790.0 (srv03_rtm.030324-2048)
66.50 KB (68,096 bytes)
4/8/2004 1:48 PM
c:\windows\system32\imaadp32.acm
Microsoft Corporation
OK
C:\windows\system32\IMAADP32.ACM
5.2.3790.0 (srv03_rtm.030324-2048)
55.00 KB (56,320 bytes)
4/8/2004 1:48 PM
c:\windows\system32\msadp32.acm
Microsoft Corporation
OK
C:\windows\system32\MSADP32.ACM
5.2.3790.0 (srv03_rtm.030324-2048)
49.00 KB (50,176 bytes)
4/8/2004 1:48 PM

[Video Codecs]

CODEC Manufacturer Description Status
File Version Size
Creation Date
c:\windows\system32\msrle32.dll
Microsoft Corporation
OK
C:\windows\system32\MSRLE32.DLL
5.2.3790.0 (srv03_rtm.030324-2048)
24.50 KB (25,088 bytes)
4/8/2004 1:48 PM

c:\windows\system32\msvidc32.dll
Microsoft Corporation
OK
C:\windows\system32\MSVIDC32.DLL
5.2.3790.0 (srv03_rtm.030324-2048)
67.00 KB (68,608 bytes)
4/8/2004 1:48 PM

[CD-ROM]

Item Value
Drive D:
Description CD-ROM Drive
Media Loaded No
Media Type CD-ROM
Name CD-ROM Drive
Manufacturer (Standard CD-ROM drives)
Status OK
Transfer Rate Not Available
SCSI Target ID 0
PNP Device ID IDE\CDROMTEAC_DV-28E-B_____2.2B____\6&FC5EAC&0&0.0.0
Driver
c:\windows\system32\drivers\cdrom.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 144.50 KB (147,968 bytes), 4/8/2004 1:48 PM)

[Sound Device]

Item Value

[Display]

Item Value
Name RADEON 7000 SERIES
PNP Device ID
PCI\VEN_1002&DEV_5159&SUBSYS_1292103C&REV_00\4&4F5EBC7&0&20
Adapter Type Not Available
Adapter Description ATI Technologies Inc.

Adapter RAM Not Available
Installed Drivers Not Available
Driver Version Not Available
INF File 5.2.3763.0 (oem3.inf section)

Color Planes ati2mtag_RV100
Color Table Entries Not Available
Resolution Not Available
Bits/Pixel Not Available
Memory Address 0x80000000-0x8FFFFFFF
I/O Port 0x00000D00-0x00000DFF
Memory Address 0x84040000-0x8404FFFF
IRQ Channel IRQ 22
I/O Port 0x000003B0-0x000003BB
I/O Port 0x000003C0-0x000003DF
Memory Address 0xA0000-0xFFFFF

Driver
c:\windows\system32\drivers\ati2mtag.sys (6.14.10.6368, 1.46 MB (1,534,976 bytes), 4/8/2004 1:50 PM)

[Infrared]

Item Value

[Input]

[Keyboard]

Item Value

[Pointing Device]

Item Value

[Modem]

Item Value

[Network]

[Adapter]

Item Value
Name [00000001] Intel(R) PRO/1000 MT Dual Port Server Adapter
Adapter Type Ethernet 802.3
Product Type Intel(R) PRO/1000 MT Dual Port Server Adapter
Installed Yes
PNP Device ID
PCI\VEN_8086&DEV_1079&SUBSYS_12A6103C&REV_03\4&2C178B65&0&10

Last Reset 3/6/2006 3:04 PM
Index 1
Service Name E1000
IP Address 15.1.200.1
IP Subnet 255.255.0.0
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:30:6E:5D:AC:84
Memory Address 0x90120000-0x9013FFFF
Memory Address 0x900C0000-0x900FFFFF
I/O Port 0x00002240-0x0000227F
IRQ Channel IRQ 31
Driver
c:\windows\system32\drivers\e1000645.sys (7.2.17.0 built by: WinDDK, 410.00 KB (419,840 bytes), 4/8/2004 1:50 PM)

Name [00000002] RAS Async Adapter

Adapter Type Not Available
Product Type RAS Async Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 3/6/2006 3:04 PM
Index 2
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000003] WAN Miniport (L2TP)

Adapter Type Not Available
Installed Yes
Product Type WAN Miniport (L2TP)
PNP Device ID
ROOT\MS_L2TPMINIPORT\0000

Last Reset 3/6/2006 3:04 PM
Index 3
Service Name Rasl2tp
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver
c:\windows\system32\drivers\rasl2tp.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 188.00 KB (192,512 bytes), 4/8/2004 1:48 PM)

Name [00000004] WAN Miniport (PPTP)

Adapter Type Wide Area Network (WAN)
Product Type WAN Miniport (PPTP)
Installed Yes
PNP Device ID
ROOT\MS_PPTPMINIPORT\0000

Last Reset 3/6/2006 3:04 PM
Index 4
Service Name PptpMiniport
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 50:50:54:50:30:30
Driver
c:\windows\system32\drivers\raspptp.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 176.00 KB (180,224 bytes), 4/8/2004 1:48 PM)

Name [00000005] WAN Miniport (PPPOE)

Adapter Type Wide Area Network (WAN)
Product Type WAN Miniport (PPPOE)
Installed Yes
PNP Device ID
ROOT\MS_PPPOEMINIPORT\0000

Last Reset 3/6/2006 3:04 PM
Index 5
Service Name RasPppoe
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 33:50:6F:45:30:30
Driver
c:\windows\system32\drivers\raspppoe.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 131.00 KB (134,144 bytes), 4/8/2004 1:48 PM)

Name [00000006] Direct Parallel
Adapter Type Not Available

Product Type Direct Parallel
Installed Yes

PNP Device ID
ROOT\MS_PTIMINIPORT\0000

Last Reset 3/6/2006 3:04 PM
Index 6
Service Name Raspti
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver
c:\windows\system32\drivers\raspti.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 54.50 KB (55,808 bytes), 4/8/2004 1:48 PM)

Name [00000007] WAN Miniport (IP)

Adapter Type Not Available
Product Type WAN Miniport (IP)
Installed Yes
PNP Device ID
ROOT\MS_NDISWANIP\0000

Last Reset 3/6/2006 3:04 PM
Index 7
Service Name NdisWan
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver
c:\windows\system32\drivers\ndiswan.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 266.50 KB (272,896 bytes), 4/8/2004 1:48 PM)

Name [00000008] Intel(R) PRO/1000 MT Dual Port Server Adapter
Adapter Type Ethernet 802.3
Product Type Intel(R) PRO/1000 MT Dual Port Server Adapter
Installed Yes
PNP Device ID
PCI\VEN_8086&DEV_1079&SUBSYS_12A6103C&REV_03\4&2C178B65&0&11

Last Reset 3/6/2006 3:04 PM
Index 8
Service Name E1000
IP Address 15.1.200.2
IP Subnet 255.255.0.0
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:30:6E:5D:AC:85
Memory Address 0x90100000-0x9011FFFF
Memory Address 0x90040000-0x9007FFFF
I/O Port 0x00002200-0x0000223F
IRQ Channel IRQ 32
Driver
c:\windows\system32\drivers\e1000645.sys (7.2.17.0 built by: WinDDK, 410.00 KB (419,840 bytes), 4/8/2004 1:50 PM)

Name [00000009] Intel(R) PRO/1000 MT Dual Port Server Adapter
Adapter Type Not Available
Product Type Intel(R) PRO/1000 MT Dual Port Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 3/6/2006 3:04 PM
Index 9
Service Name E1000
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled Yes
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000010] Intel(R) PRO/1000 MT Dual Port Server Adapter
Adapter Type Not Available
Product Type Intel(R) PRO/1000 MT Dual Port Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 3/6/2006 3:04 PM
Index 10
Service Name E1000
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled Yes
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

[Protocol]

Item Value
Name MSAFD Tcpip [TCP/IP]
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 16 bytes
Maximum Message Size 0 bytes
Message Oriented No
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data Yes
Supports Graceful Closing Yes
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD Tcpip [UDP/IP]
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 16 bytes
Maximum Message Size 63.93 KB (65,467 bytes)
Message Oriented Yes
Pseudo Stream Oriented No
Minimum Address Size 16 bytes
Supports Broadcasting Yes

Supports Connect Data No

Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting Yes

Name RSVP UDP Service Provider
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 16 bytes
Maximum Message Size 63.93 KB (65,467 bytes)
Message Oriented Yes
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption Yes
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting Yes

Name RSVP TCP Service Provider
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 16 bytes
Maximum Message Size 0 bytes
Message Oriented No
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption Yes
Supports Expedited Data Yes
Supports Graceful Closing Yes
Supports Guaranteed Bandwidth No

Supports Multicasting No

[WinSock]

Item Value
File c:\windows\system32\wsock32.dll

Size 23.00 KB (23,552 bytes)
Version 5.2.3790.0 (srv03_rtm.030324-2048)

[Ports]

[Serial]

Item Value
Name HP MP Serial AUX/UPS Port (COM3)

Status OK
PNP Device ID
PCI\VEN_103C&DEV_1290&SUBSYS_1291103C&REV_01\4&4F5EBC7&0&08
Maximum Input Buffer Size 0

Maximum Output Buffer Size No

Settable Baud Rate Yes
Settable Data Bits Yes
Settable Flow Control Yes
Settable Parity Yes

Settable Parity Check Yes
Settable Stop Bits Yes
Settable RLSD Yes
Supports RLSD Yes
Supports 16 Bit Mode No
Supports Special Characters No

Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy No
Abort Read/Write on Error No
Binary Mode Enabled Yes
Continue XMit on XOff No
CTS Outflow Control No
Discard NULL Bytes No
DSR Outflow Control 0
DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0
Error Replacement Enabled No

Event Character 0
Parity Check Enabled No
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
Memory Address 0x84054000-0x8405400F
IRQ Channel IRQ 16
Driver c:\windows\system32\drivers\hpmpser.sys (5.0.3663.16, 154.00 KB (157,696 bytes), 4/8/2004 1:50 PM)

[Parallel]

Item Value

[Storage]

[Drives]

Item Value
Drive C:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 32.00 GB (34,359,734,272 bytes)

Free Space 16.53 GB (17,747,738,624 bytes)

Volume Name Syspart
Volume Serial Number 14F65122

Drive D:
Description CD-ROM Disc

Drive G:
Description Local Fixed Disk
File System NTFS
Size 48.90 GB (52,510,183,424 bytes)

Free Space 39.08 GB (41,965,969,408 bytes)

Volume Name G_Drive

Volume Serial Number 6CFF254B

Drive L:
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

Drive Z:
Description Network Connection
Provider Name \\olymaster\f$

[Disks]

Item Value
Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 1
SCSI Target ID 0
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #0, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #0, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 1
SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #1, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #1, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #1, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 1
SCSI Target ID 1
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #2, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #2, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 1
SCSI Target ID 1
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #3, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #3, Partition #1

Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #3, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes

Description Disk drive
Manufacturer (Standard disk drives)

Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 7
SCSI Target ID 0
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #22, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #22, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 7
SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #23, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #23, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #23, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes
Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 7
SCSI Target ID 1

Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #24, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #24, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 7
SCSI Target ID 1
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #25, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #25, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #25, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Partitions 2
Media Type Fixed hard disk
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 13
SCSI Target ID 0
Sectors/Track 63
Size 957.12 GB (1,027,699,384,320 bytes)
Total Cylinders 124,944
Total Sectors 2,007,225,360
Total Tracks 31,860,720
Tracks/Cylinder 255
Partition Disk #37, Partition #0
Partition Size 908.21 GB (975,180,971,520 bytes)

Partition Starting Offset 8,225,280 bytes

Partition Disk #37, Partition #1
Partition Size 48.90 GB (52,510,187,520 bytes)

Partition Starting Offset 975,189,196,800 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 5
SCSI Target ID 0
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #14, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #14, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 5
SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #15, Partition #0

Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #15, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #15, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes
Partition Disk #15, Partition #3
Partition Size 44.92 GB (48,234,496,000 bytes)

Partition Starting Offset 419,969,368,064 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 5
SCSI Target ID 1
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #16, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #16, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 5
SCSI Target ID 1
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #17, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes
Partition Disk #17, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #17, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes
Partition Disk #17, Partition #3
Partition Size 44.92 GB (48,234,496,000 bytes)

Partition Starting Offset 419,969,368,064 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device

Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 9
SCSI Target ID 0
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #30, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #30, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 9
SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #31, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #31, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #31, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 3
SCSI Target ID 0
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #8, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #8, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 3
SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #9, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #9, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #9, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 6
SCSI Target ID 0
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #18, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #18, Partition #1

Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 6
SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #19, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #19, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #19, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes
Partition Disk #19, Partition #3
Partition Size 44.92 GB (48,234,496,000 bytes)

Partition Starting Offset 419,969,368,064 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 6
SCSI Target ID 1
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #20, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #20, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 6
SCSI Target ID 1
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #21, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #21, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #21, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 2
SCSI Target ID 0
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #4, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #4, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 5
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 2

SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #5, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #5, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #5, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes
Partition Disk #5, Partition #3
Partition Size 44.92 GB (48,234,496,000 bytes)

Partition Starting Offset 419,969,368,064 bytes
Partition Disk #5, Partition #4
Partition Size 44.92 GB (48,234,496,000 bytes)

Partition Starting Offset 468,203,864,064 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1

SCSI Port 2
SCSI Target ID 1
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #6, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #6, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 2
SCSI Target ID 1

Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #7, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #7, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #7, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes
Partition Disk #7, Partition #3
Partition Size 44.92 GB (48,234,496,000 bytes)

Partition Starting Offset 419,969,368,064 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 8
SCSI Target ID 0
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #26, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #26, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 8
SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430

Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #27, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #27, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #27, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes
Partition Disk #27, Partition #3
Partition Size 44.92 GB (48,234,496,000 bytes)

Partition Starting Offset 419,969,368,064 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 8
SCSI Target ID 1
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #28, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #28, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 8
SCSI Target ID 1
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #29, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #29, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #29, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes
Partition Disk #29, Partition #3
Partition Size 44.92 GB (48,234,496,000 bytes)

Partition Starting Offset 419,969,368,064 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 4
SCSI Target ID 0
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #10, Partition #0

Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #10, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 4
SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #11, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #11, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes

Partition Disk #11, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 4
SCSI Target ID 1
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #12, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #12, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 10
SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #13, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #13, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #13, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device

Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 10
SCSI Target ID 0
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #32, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #32, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 10
SCSI Target ID 0
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #33, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #33, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #33, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes
Partition Disk #33, Partition #3
Partition Size 44.92 GB (48,234,496,000 bytes)

Partition Starting Offset 419,969,368,064 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2

SCSI Bus 0

SCSI Logical Unit 1
SCSI Port 10
SCSI Target ID 1
Sectors/Track 63
Size 131.12 GB (140,792,117,760 bytes)

Total Cylinders 17,117
Total Sectors 274,984,605
Total Tracks 4,364,835
Tracks/Cylinder 255
Partition Disk #34, Partition #0
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #34, Partition #1
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 90,330,628,096 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model COMPAQ MSA1000 VOLUME SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 2

SCSI Port 10
SCSI Target ID 1
Sectors/Track 63
Size 646.71 GB (694,394,588,160 bytes)

Total Cylinders 84,422
Total Sectors 1,356,239,430
Total Tracks 21,527,610
Tracks/Cylinder 255
Partition Disk #35, Partition #0
Partition Size 260.00 GB (279,172,874,240 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #35, Partition #1
Partition Size 84.00 GB (90,194,313,216 bytes)

Partition Starting Offset 279,309,189,120 bytes
Partition Disk #35, Partition #2
Partition Size 47.00 GB (50,465,865,728 bytes)

Partition Starting Offset 369,503,502,336 bytes
Partition Disk #35, Partition #3
Partition Size 44.92 GB (48,234,496,000 bytes)

Partition Starting Offset 419,969,368,064 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model HP 36.4G MAS3367NC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 11
SCSI Target ID 0
Sectors/Track 63
Size 33.91 GB (36,413,314,560 bytes)

Total Cylinders 4,427
Total Sectors 71,119,755
Total Tracks 1,128,885
Tracks/Cylinder 255
Partition Disk #36, Partition #0
Partition Size 100.00 MB (104,857,600 bytes)

Partition Starting Offset 17,408 bytes
Partition Disk #36, Partition #1
Partition Size 400.00 MB (419,430,400 bytes)

Partition Starting Offset 104,875,008 bytes

Partition Disk #36, Partition #2
Partition Size 32.00 GB (34,359,738,368 bytes)

Partition Starting Offset 658,523,136 bytes

[SCSI]

Item Value
Name LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device
Manufacturer LSI Logic
Status OK
PNP Device ID PCI\VEN_1000&DEV_0021&SUBSYS_1340103C&REV_01\4&2C178B65&0&08
I/O Port 0x00002100-0x000021FF
Memory Address 0x90185000-0x901853FF
Memory Address 0x90182000-0x90183FFF
IRQ Channel IRQ 27
Driver c:\windows\system32\drivers\sym_u3.sys (5.09.06.00 built by: WinDDK, 91.50 KB (93,696 bytes), 4/8/2004 1:50 PM)

Name LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-66 Device
Manufacturer LSI Logic
Status OK
PNP Device ID PCI\VEN_1000&DEV_0021&SUBSYS_1340103C&REV_01\4&2C178B65&0&09

I/O Port 0x00002000-0x00003FFF
Memory Address 0x90184000-0x901843FF
Memory Address 0x90180000-0x90181FFF
IRQ Channel IRQ 28
Driver c:\windows\system32\drivers\sym_u3.sys (5.09.06.00 built by: WinDDK, 91.50 KB (93,696 bytes), 4/8/2004 1:50 PM)

Name QLogic Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&915E908&0&08
I/O Port 0x00004100-0x000041FF
Memory Address 0xA0041000-0xA0041FFF
IRQ Channel IRQ 38
Driver c:\windows\system32\drivers\ql2300.sys (9.0.2.11 (wia64 IP), 1.05 MB (1,099,264 bytes), 9/15/2005 4:03 PM)

Name QLogic Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&915E908&0&09
I/O Port 0x00004000-0x00007FFF
Memory Address 0xA0040000-0xA0040FFF
IRQ Channel IRQ 39
Driver c:\windows\system32\drivers\ql2300.sys (9.0.2.11 (wia64 IP), 1.05 MB (1,099,264 bytes), 9/15/2005 4:03 PM)

Name Emulex LightPulse LP1050, PCI Slot 3, Storport Miniport Driver
Manufacturer Emulex
Status OK
PNP Device ID PCI\VEN_10DF&DEV_F0A5&SUBSYS_F0A510DF&REV_01\4&15291AB&0&08
Memory Address 0xC0045000-0xC0045FFF
Memory Address 0xC0044000-0xC00440FF
I/O Port 0x00008300-0x000083FF
IRQ Channel IRQ 53
Driver c:\windows\system32\drivers\elxstor.sys (6-1.11X1 11/07/2005 WS2K3 64 bit IA64 built by: WinDDK, 777.50 KB (796,160 bytes), 8/15/2005 10:06 AM)

Name Emulex LightPulse LP1050, PCI Slot 3, Storport Miniport Driver
Manufacturer Emulex
Status Error
PNP Device ID PCI\VEN_10DF&DEV_F0A5&SUBSYS_F0A510DF&REV_01\4&15291AB&0&09

Driver c:\windows\system32\drivers\elxstor.sys (6-1.11X1 11/07/2005 WS2K3 64 bit IA64 built by: WinDDK, 777.50 KB (796,160 bytes), 8/15/2005 10:06 AM)

Name QLogic Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&15291AB&0&10
I/O Port 0x00008100-0x000081FF
Memory Address 0xC0041000-0xC0041FFF
IRQ Channel IRQ 49
Driver c:\windows\system32\drivers\ql2300.sys (9.0.2.11 (wia64 IP), 1.05 MB (1,099,264 bytes), 9/15/2005 4:03 PM)

Name QLogic Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&15291AB&0&11

I/O Port 0x00008000-0x00009FFF
Memory Address 0xC0040000-0xC0040FFF
IRQ Channel IRQ 50
Driver c:\windows\system32\drivers\ql2300.sys (9.0.2.11 (wia64 IP), 1.05 MB (1,099,264 bytes), 9/15/2005 4:03 PM)

Name QLogic Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&24543408&0&08
I/O Port 0x0000A300-0x0000A3FF
Memory Address 0xD0083000-0xD0083FFF
IRQ Channel IRQ 64
Driver c:\windows\system32\drivers\ql2300.sys (9.0.2.11 (wia64 IP), 1.05 MB (1,099,264 bytes), 9/15/2005 4:03 PM)

Name QLogic Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&24543408&0&09
I/O Port 0x0000A200-0x0000A2FF
Memory Address 0xD0082000-0xD0082FFF
IRQ Channel IRQ 65
Driver
c:\windows\system32\drivers\ql2300.sys (9.0.2.11 (wia64 IP), 1.05 MB (1,099,264 bytes), 9/15/2005 4:03 PM)

Name QLogic Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&24543408&0&10
I/O Port 0x0000A100-0x0000A1FF
Memory Address 0xD0081000-0xD0081FFF
IRQ Channel IRQ 60
Driver
c:\windows\system32\drivers\ql2300.sys (9.0.2.11 (wia64 IP), 1.05 MB (1,099,264 bytes), 9/15/2005 4:03 PM)

Name QLogic Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&24543408&0&11
I/O Port 0x0000A000-0x0000BFFF
Memory Address 0xD0080000-0xD0080FFF
IRQ Channel IRQ 61
Driver
c:\windows\system32\drivers\ql2300.sys (9.0.2.11 (wia64 IP), 1.05 MB (1,099,264 bytes), 9/15/2005 4:03 PM)

Name QLogic Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&5D9CB86&0&08
I/O Port 0x0000C100-0x0000C1FF
Memory Address 0xE0041000-0xE0041FFF
IRQ Channel IRQ 71
Driver
c:\windows\system32\drivers\ql2300.sys (9.0.2.11 (wia64 IP), 1.05 MB (1,099,264 bytes), 9/15/2005 4:03 PM)

Name QLogic Fibre Channel Adapter

Manufacturer QLogic
Status OK
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&5D9CB86&0&09
I/O Port 0x0000C000-0x0000FFFF
Memory Address 0xE0040000-0xE0040FFF
IRQ Channel IRQ 72
Driver
c:\windows\system32\drivers\ql2300.sys (9.0.2.11 (wia64 IP), 1.05 MB (1,099,264 bytes), 9/15/2005 4:03 PM)

[IDE]

Item Value
Name CMD PCI-0649 Ultra DMA IDE Controller
Manufacturer CMD Technology
Status OK
PNP Device ID
PCI\VEN_1095&DEV_0649&SUBSYS_06491095&REV_02\4&4F5EBC7&0&18
I/O Port 0x00000E18-0x00000E1F
I/O Port 0x00000E24-0x00000E27
I/O Port 0x00000E10-0x00000E17
I/O Port 0x00000E20-0x00000E23
I/O Port 0x00000E00-0x00000E0F
IRQ Channel IRQ 21
Driver
c:\windows\system32\drivers\cmdide.sys (2.0.7 (srv03_sp1_rtm.050324-1447), 19.00 KB (19,456 bytes), 4/8/2004 3:03 PM)

Name Primary IDE Channel
Manufacturer (Standard IDE ATA/ATAPI controllers)
Status OK
PNP Device ID
PCIIDE\IDECHANNEL\5&2F7BD88F&0&0
Driver
c:\windows\system32\drivers\atapi.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 302.00 KB (309,248 bytes), 4/8/2004 3:03 PM)

[Printing]

Name Driver Port Name Server Name

[Problem Devices]

Device PNP Device ID Error Code

Emulex LightPulse LP1050, PCI Slot 3, Storport Miniport Driver
PCI\VEN_10DF&DEV_F0A5&SUBSYS_F0A510DF&REV_01\4&15291AB&0&09
This device is disabled.

[USB]

Device PNP Device ID
NEC PCI to USB Open Host Controller
PCI\VEN_1033&DEV_0035&SUBSYS_00351033&REV_41\4&4F5EBC7&0&10
NEC PCI to USB Open Host Controller
PCI\VEN_1033&DEV_0035&SUBSYS_00351033&REV_41\4&4F5EBC7&0&11
NEC PCI to USB Enhanced Host Controller (B1)
PCI\VEN_1033&DEV_00E0&SUBSYS_00E01033&REV_02\4&4F5EBC7&0&12

[Software Environment]

[System Drivers]

Name Description File Type Started Start Mode State Status Error Control Accept Pause Accept Stop

abiosdsk Abiosdsk Not Available Kernel Driver No Disabled Stopped OK Ignore No No

acpi Microsoft ACPI Driver
c:\windows\system32\drivers\acpi.sys Kernel Driver Yes Boot Running OK Normal No Yes

acpiec ACPIEC
c:\windows\system32\drivers\acpiec.sys Kernel Driver No Disabled Stopped OK Normal No No

adpu160m adpu160m
c:\windows\system32\drivers\adpu160m.sys Kernel Driver No Disabled Stopped OK Normal No No

adpu320 adpu320
c:\windows\system32\drivers\adpu320.sys Kernel Driver No Disabled Stopped OK Normal No No

afcnt afcnt
c:\windows\system32\drivers\afcnt.sys Kernel Driver No Disabled Stopped OK Normal No No

afd AFD Networking Support Environment
c:\windows\system32\drivers\afd.sys Kernel Driver Yes System Running OK Normal No Yes

agp460 Intel AGP Bus Filter
c:\windows\system32\drivers\agp460.sys Kernel Driver No Disabled Stopped OK Normal No No

aic78u2 aic78u2
c:\windows\system32\drivers\aic78u2.sys Kernel Driver No Disabled Stopped OK Normal No No

aic78xx aic78xx
c:\windows\system32\drivers\aic78xx.sys Kernel Driver No Disabled Stopped OK Normal No No

aliide AliIde
c:\windows\system32\drivers\aliide.sys Kernel Driver No Disabled Stopped OK Normal No No

asyncmac RAS Asynchronous Media Driver
c:\windows\system32\drivers\asyncmac.sys Kernel Driver No Manual Stopped OK Normal No No

atapi Standard IDE/ESDI Hard Disk Controller
c:\windows\system32\drivers\atapi.sys Kernel Driver Yes Boot Running OK Normal No Yes

atdisk Atdisk Not Available Kernel
Driver No Disabled Stopped
OK Ignore No
No
ati2mtag ati2mtag
c:\windows\system32\drivers\ati2m
tag.sys Kernel Driver Yes Manual
Running OK Ignore
No Yes
atmarpc ATM ARP Client Protocol
c:\windows\system32\drivers\atmar
pc.sys Kernel Driver No Manual
Stopped OK Normal
No No
audstub Audio Stub Driver
c:\windows\system32\drivers\audst
ub.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
b57nd Broadcom NetXtreme Gigabit
Ethernet
c:\windows\system32\drivers\b57x
p64.sys Kernel Driver No Manual
Stopped OK Normal
No No
beep Beep
c:\windows\system32\drivers\beep.
sys Kernel Driver Yes System
Running OK Normal
No Yes
cbidf cbidf
c:\windows\system32\drivers\cbidf2
k.sys Kernel Driver No Disabled
Stopped OK Normal
No No
cbidf2k cbidf2k
c:\windows\system32\drivers\cbidf2
k.sys Kernel Driver No Disabled
Stopped OK Normal
No No
cdfs Cdfs
c:\windows\system32\drivers\cdfs.s
ys File System Driver Yes
Disabled Running OK
Normal No Yes

cdrom CD-ROM Driver
c:\windows\system32\drivers\cdro
m.sys Kernel Driver Yes System
Running OK Normal
No Yes
changer Changer Not Available Kernel
Driver No System Stopped
OK Ignore No
No

clusdisk Cluster Disk Driver
c:\windows\system32\drivers\clusdi
sk.sys Kernel Driver No Disabled
Stopped OK Normal
No No

cmdide CmdIde
c:\windows\system32\drivers\cmdid
e.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
cpqarry2 cpqarry2
c:\windows\system32\drivers\cpqar
ry2.sys Kernel Driver No Disabled
Stopped OK Normal
No No

cpqcisse CPQCISSE
c:\windows\system32\drivers\cpqci
sse.sys Kernel Driver No Manual
Stopped OK Normal
cpqcissm cpqcissm No
c:\windows\system32\drivers\cpqci
ssm.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
cpqfcac CPQFCAC
c:\windows\system32\drivers\cpqfc
ac.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
cpqfcalm cpqfcalm
c:\windows\system32\drivers\cpqfc
alm.sys Kernel Driver No Disabled
Stopped OK Normal
No No
crcdisk CRC Disk Filter Driver
c:\windows\system32\drivers\crcdis
k.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
dfsdriver DfsDriver
c:\windows\system32\drivers\dfs.sy
s File System Driver Yes
Boot Running OK
Normal No Yes

disk Disk Driver
c:\windows\system32\drivers\disk.s
ys Kernel Driver Yes Boot
Running OK Normal
No Yes
dmboot dmboot
c:\windows\system32\drivers\dmbo
ot.sys Kernel Driver No Disabled
Stopped OK Normal
No No
dmio Logical Disk Manager Driver
c:\windows\system32\drivers\dmio.
sys Kernel Driver Yes Boot
Running OK Normal
No Yes
dmload dmload
c:\windows\system32\drivers\dmlo
ad.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
dpti2o dpti2o
c:\windows\system32\drivers\dpti2
o.sys Kernel Driver No Disabled
Stopped OK Normal
No No

e1000 Intel(R) PRO/1000 Adapter Driver
c:\windows\system32\drivers\e100
0645.sys Kernel Driver Yes Manual
Running OK Normal
No Yes

elxadjct elxadjct
c:\windows\system32\drivers\elxadj
ct.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
elxstor elxstor
c:\windows\system32\drivers\elxsto
r.sys Kernel Driver Yes Boot
Running OK Normal
No Yes

em em
\??\c:\windows\system32\drivers\e
m.sys Kernel Driver No Manual
Stopped OK Normal
fastfat Fastfat No
c:\windows\system32\drivers\fastfa
t.sys File System Driver No
Disabled Stopped OK
Normal No No

fdc Fdc
c:\windows\system32\drivers\fdc.sy
s Kernel Driver No System
Stopped OK Ignore
No No
fips Fips
c:\windows\system32\drivers\fips.s
ys Kernel Driver Yes System
Running OK Normal
No Yes
flpydisk Flpydisk
c:\windows\system32\drivers\flpydi
sk.sys Kernel Driver No System
Stopped OK Ignore
No No
fltmgr FltMgr
c:\windows\system32\drivers\fltmgr
.sys File System Driver Yes
Boot Running OK
Normal No Yes

ftdisk Volume Manager Driver
c:\windows\system32\drivers\ftdisk.
sys Kernel Driver Yes Boot
Running OK Normal
No Yes
gpc Generic Packet Classifier
c:\windows\system32\drivers\msgp
c.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
hidusb Microsoft HID Class Driver
c:\windows\system32\drivers\hidus
b.sys Kernel Driver No Manual
Stopped OK Ignore
No No
hpcisss hpcisss
c:\windows\system32\drivers\hpcis
ss.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
hpcisss2 HpCISSs2
c:\windows\system32\drivers\hpcis
ss2.sys Kernel Driver Yes Boot
Running OK Normal
No Yes

hphlth HP Baseboard Management
Controller Interface Driver
c:\windows\system32\drivers\hphlt
h.sys Kernel Driver Yes Manual
Running OK Normal
No Yes

hpmpser HP MP Driver
c:\windows\system32\drivers\hpmp
ser.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
hpn hpn
c:\windows\system32\drivers\hpn.s
ys Kernel Driver No Disabled
Stopped OK Normal
No No

hpqcissb Smart Array Controllers Non-Miniport Bus Driver
c:\windows\system32\drivers\hpqci
ssb.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
hpqcissd Smart Array Controllers Non-Miniport Disk Driver
c:\windows\system32\drivers\hpqci
ssd.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
http HTTP
c:\windows\system32\drivers\http.s
ys Kernel Driver No Manual
Stopped OK Normal
No No
i2omgmt i2omgmt Not Available Kernel
Driver No System Stopped
OK Normal No
No
imapi CD-Burning Filter Driver
c:\windows\system32\drivers\imapi.
sys Kernel Driver No System
Stopped OK Normal
No No
intelide IntelIde
c:\windows\system32\drivers\intelid
e.sys Kernel Driver No Disabled
Stopped OK Normal
No No
interruptaffinityfilter Interrupt Affinity Filter
c:\windows\system32\drivers\intfiltr
.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
ip6fw IPv6 Windows Firewall Driver
c:\windows\system32\drivers\ip6fw
.sys Kernel Driver No Manual
Stopped OK Normal
No No
ipfilterdriver IP Traffic Filter Driver
c:\windows\system32\drivers\ipfltdr
v.sys Kernel Driver No Manual
Stopped OK Normal
No No
ipinip IP in IP Tunnel Driver
c:\windows\system32\drivers\ipinip.
sys Kernel Driver No Manual
Stopped OK Normal
No No
ipnat IP Network Address Translator
c:\windows\system32\drivers\ipnat.
sys Kernel Driver No Manual
Stopped OK Normal
No No

ipsec IPSEC driver
c:\windows\system32\drivers\ipsec.
sys Kernel Driver Yes System
Running OK Normal
No Yes

isapnp PnP ISA/EISA Bus Driver
c:\windows\system32\drivers\isapn
p.sys Kernel Driver No Disabled
Stopped OK Critical
No No
kbdclass Keyboard Class Driver
c:\windows\system32\drivers\kbdcl
ass.sys Kernel Driver Yes System
Running OK Normal
No Yes

kbdhid Keyboard HID Driver
c:\windows\system32\drivers\kbdhi
d.sys Kernel Driver No System
Stopped OK Ignore
krdrv Kernel Driver No
c:\windows\system32\drivers\krdrv.
sys Kernel Driver No Manual
Stopped OK Normal
No No
ksecdd KSecDD
c:\windows\system32\drivers\ksecd
d.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
ksthunk Kernel Streaming WOW64 Thunk Service
c:\windows\system32\drivers\ksthu
nk.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
lp6nds35 lp6nds35
c:\windows\system32\drivers\lp6nd
s35.sys Kernel Driver No Disabled
Stopped OK Normal
No No
lpxftr lpxftr
c:\windows\system32\drivers\lpxftr.
sys Kernel Driver Yes Boot
Running OK Normal
No Yes
lpxnds lpxnds
c:\windows\system32\drivers\lpxnd
s.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
memtest memtest
\??\c:\kstress\ksk\memory\memtes
t.sys Kernel Driver No Manual
Stopped OK Normal
No No
mnmdd mnmdd Not Available Kernel
Driver No System Stopped
OK Ignore No
No
modem Modem
c:\windows\system32\drivers\mode
m.sys Kernel Driver No Manual
Stopped OK Ignore
No No
mouclass Mouse Class Driver
c:\windows\system32\drivers\moucl
ass.sys Kernel Driver Yes System
Running OK Normal
No Yes
mouhid Mouse HID Driver
c:\windows\system32\drivers\mouh
id.sys Kernel Driver No Manual
Stopped OK Ignore
No No

mountmgr Mount Point Manager
c:\windows\system32\drivers\moun
tmgr.sys Kernel Driver Yes Boot
Running OK Normal
No Yes

mraid35x mraid35x
c:\windows\system32\drivers\mraid
35x.sys Kernel Driver No Disabled
Stopped OK Normal
No No

mrxdav WebDav Client Redirector
c:\windows\system32\drivers\mrxd
av.sys File System Driver No
Manual Stopped OK
Normal No No
mrxsmb MRXSMB
c:\windows\system32\drivers\mrxs
mb.sys File System Driver Yes
System Running OK
Normal No Yes

msfs Msfs
c:\windows\system32\drivers\msfs.
sys File System Driver Yes
System Running OK
Normal No Yes

mssmbios Microsoft System Management BIOS Driver
c:\windows\system32\drivers\mssm
bios.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
mup Mup
c:\windows\system32\drivers\mup.
sys File System Driver Yes
Boot Running OK
Normal No Yes

ndis NDIS System Driver
c:\windows\system32\drivers\ndis.s
ys Kernel Driver Yes Boot
Running OK Normal
No Yes
ndistapi Remote Access NDIS TAPI Driver
c:\windows\system32\drivers\ndista
pi.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
ndisuio NDIS Usermode I/O Protocol
c:\windows\system32\drivers\ndisui
o.sys Kernel Driver No Manual
Stopped OK Normal
No No
ndiswan Remote Access NDIS WAN Driver
c:\windows\system32\drivers\ndisw
an.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
ndproxy NDIS Proxy
c:\windows\system32\drivers\ndpro
xy.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
netbios NetBIOS Interface
c:\windows\system32\drivers\netbi
os.sys File System Driver Yes
System Running OK
Normal No Yes

netbt NetBios over Tcpip
c:\windows\system32\drivers\netbt.
sys Kernel Driver Yes System
Running OK Normal
No Yes

nfrd960 nfrd960
c:\windows\system32\drivers\nfrd9
60.sys Kernel Driver No Disabled
Stopped OK Normal
No No

npfs Npfs
c:\windows\system32\drivers\npfs.s
ys File System Driver Yes
System Running OK
Normal No Yes

ntfs Ntfs
c:\windows\system32\drivers\ntfs.s
ys File System Driver Yes
Disabled Running OK
Normal No Yes

null Null
c:\windows\system32\drivers\null.s
ys Kernel Driver Yes System
Running OK Normal
No Yes
partmgr Partition Manager
c:\windows\system32\drivers\partm
gr.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
pci PCI Bus Driver
c:\windows\system32\drivers\pci.sy
s Kernel Driver Yes Boot
Running OK Critical
No Yes
pciide PCIIde
c:\windows\system32\drivers\pciide
.sys Kernel Driver No Disabled
Stopped OK Normal
No No
pcmcia Pcmcia
c:\windows\system32\drivers\pcmci
a.sys Kernel Driver No Disabled
Stopped OK Normal
No No
pdcomp PDCOMP Not Available Kernel
Driver No Manual Stopped
OK Ignore No
No
pdframe PDFRAME Not Available Kernel
Driver No Manual Stopped
OK Ignore No
No
pdreli PDRELI Not Available Kernel
Driver No Manual Stopped
OK Ignore No
No
pdrframe PDRFRAME Not Available Kernel
Driver No Manual Stopped
OK Ignore No
No
pptpminiport WAN Miniport (PPTP)
c:\windows\system32\drivers\raspp
tp.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
processor Processor Driver
c:\windows\system32\drivers\proce
ssr.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
procinfo ProcInfo
c:\windows\system32\drivers\proci
nfo.sys Kernel Driver No Manual
Stopped OK Normal
No No

ptilink Direct Parallel Link Driver
c:\windows\system32\drivers\ptilink
.sys Kernel Driver Yes Manual
Running OK Normal
No Yes

ql1080 ql1080
c:\windows\system32\drivers\ql108
0.sys Kernel Driver No Disabled
Stopped OK Normal
No No
ql10wnt Ql10wnt Not Available Kernel
Driver No Disabled Stopped
OK Normal No
No
ql12160 ql12160
c:\windows\system32\drivers\ql121
60.sys Kernel Driver No Disabled
Stopped OK Normal
No No
ql1240 ql1240
c:\windows\system32\drivers\ql124
0.sys Kernel Driver No Disabled
Stopped OK Normal
No No
ql1280 ql1280
c:\windows\system32\drivers\ql128
0.sys Kernel Driver No Disabled
Stopped OK Normal
No No
ql2100 ql2100
c:\windows\system32\drivers\ql210
0.sys Kernel Driver No Disabled
Stopped OK Normal
No No
ql2200 ql2200
c:\windows\system32\drivers\ql220
0.sys Kernel Driver No Disabled
Stopped OK Normal
No No
ql2300 QLogic Fibre Channel SCSI Miniport
Driver (wia64 IP)
c:\windows\system32\drivers\ql230
0.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
qldirect qldirect
c:\windows\system32\drivers\qldire
ct.sys Kernel Driver Yes Auto
Running OK Normal
No Yes
rasacd Remote Access Auto Connection
Driver
c:\windows\system32\drivers\rasac
d.sys Kernel Driver Yes System
Running OK Normal
No Yes
rasl2tp WAN Miniport (L2TP)
c:\windows\system32\drivers\rasl2t
p.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
raspppoe Remote Access PPPOE Driver
c:\windows\system32\drivers\raspp
poe.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
raspti Direct Parallel
c:\windows\system32\drivers\raspti
.sys Kernel Driver Yes Manual
Running OK Normal
No Yes

rdbss Rdbss
c:\windows\system32\drivers\rdbss.
sys File System Driver Yes
System Running OK
Normal No Yes

rdpcdd RDPCDD
c:\windows\system32\drivers\rdpcd
d.sys Kernel Driver Yes System
Running OK Ignore
rdpdr Terminal Server Device Redirector
Driver No Yes
c:\windows\system32\drivers\rdpdr.
sys Kernel Driver Yes Manual
Running OK Normal
No Yes
rdpwd RDPWD
c:\windows\system32\drivers\rdpw
d.sys Kernel Driver Yes Manual
Running OK Ignore
No Yes
redbook Digital CD Audio Playback Filter
Driver
c:\windows\system32\drivers\redbo
ok.sys Kernel Driver No System
Stopped OK Normal
No No
rio2 Real I/O 2
c:\windows\system32\drivers\rio2.s
ys Kernel Driver No Manual
Stopped OK Normal
No No
serenum Serenum Filter Driver
c:\windows\system32\drivers\seren
um.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
serial Serial
c:\windows\system32\drivers\serial.
sys Kernel Driver No Auto
Stopped OK Ignore
No No
sfloppy Sfloppy
c:\windows\system32\drivers\sflopp
y.sys Kernel Driver No System
Stopped OK Ignore
No No
simbad Simbad Not Available Kernel
Driver No Disabled Stopped
OK Normal No
No
simple1 Simple1
\??\c:\kstress\ksk\wmi\simple1.sys
Kernel Driver No Manual
Stopped OK Normal
No No
slowmemory Slow Memory Measurement
c:\windows\system32\drivers\slow
memory.sys Kernel Driver No Manual
Stopped OK Normal
No No
srv Srv
c:\windows\system32\drivers\srv.sy
s File System Driver Yes
Manual Running OK
Normal No Yes

swenum Software Bus Driver
c:\windows\system32\drivers\swen
um.sys Kernel Driver Yes Manual
Running OK Normal
No Yes

symc8xx symc8xx
c:\windows\system32\drivers\symc
8xx.sys Kernel Driver No Disabled
Stopped OK Normal
No No

symmpi symmpi
c:\windows\system32\drivers\symm
pi.sys Kernel Driver No Disabled
Stopped OK Normal
No No
sym_hi sym_hi
c:\windows\system32\drivers\sym_
hi.sys Kernel Driver No Disabled
Stopped OK Normal
No No
sym_u3 sym_u3
c:\windows\system32\drivers\sym_
u3.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
tbs tbs Not Available Kernel
Driver No Disabled Stopped
OK Normal No
No
tcpip TCP/IP Protocol Driver
c:\windows\system32\drivers\tcpip.
sys Kernel Driver Yes System
Running OK Normal
No Yes
tdpipe TDPIPE
c:\windows\system32\drivers\tdpip
e.sys Kernel Driver No Manual
Stopped OK Ignore
No No
tdtcp TDTCP
c:\windows\system32\drivers\tdtcp.
sys Kernel Driver Yes Manual
Running OK Ignore
No Yes
termdd Terminal Device Driver
c:\windows\system32\drivers\termd
d.sys Kernel Driver Yes System
Running OK Normal
No Yes
toside TosIde
c:\windows\system32\drivers\toside
.sys Kernel Driver No Disabled
Stopped OK Normal
No No
udfs Udfs
c:\windows\system32\drivers\udfs.s
ys File System Driver No
Disabled Stopped OK
Normal No No

usbccgp Microsoft USB Generic Parent Driver
c:\windows\system32\drivers\usbcc
gp.sys Kernel Driver No Manual
Stopped OK Normal
No No
usbehci Microsoft USB 2.0 Enhanced Host
Controller Miniport Driver
c:\windows\system32\drivers\usbeh
ci.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
usbhub USB2 Enabled Hub
c:\windows\system32\drivers\usbhu
b.sys Kernel Driver Yes Manual
Running OK Normal
No Yes

usbohci Microsoft USB Open Host Controller
Miniport Driver
c:\windows\system32\drivers\usboh
ci.sys Kernel Driver Yes Manual
Running OK Normal
No Yes

vgasave VGA Display Controller.
c:\windows\system32\drivers\vga.s
ys Kernel Driver Yes System
Running OK Ignore
viaide MsIde Yes
c:\windows\system32\drivers\viaide
.sys Kernel Driver No Disabled
Stopped OK Normal
No No
volsnap Storage volumes
c:\windows\system32\drivers\volsn
ap.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
wanarp Remote Access IP ARP Driver
c:\windows\system32\drivers\wana
rp.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
wdica WDICA Not Available Kernel
Driver No Manual Stopped
OK Ignore No
No
wlbs Network Load Balancing
c:\windows\system32\drivers\wlbs.
sys Kernel Driver No Manual
Stopped OK Normal
No No

[Signed Drivers]

Device Name Signed Device Class Driver
Version Driver Date Manufacturer INF
Name Driver Name Device ID
Microsoft System Management BIOS Driver
Yes SYSTEM
5.2.3790.1830
10/1/2002 (Standard system
devices) machine.inf Not Available
ROOT\SYSTEM\0001
Plug and Play Software Device Enumerator
Yes SYSTEM
5.2.3790.0 10/1/2002
(Standard system devices)
machine.inf Not Available
ROOT\SYSTEM\0000
Terminal Server Mouse Driver Yes
SYSTEM 5.2.3790.0
10/1/2002 (Standard system
devices) machine.inf Not Available
ROOT\RDP_MOU\0000
Terminal Server Keyboard Driver Yes
SYSTEM 5.2.3790.0
10/1/2002 (Standard system
devices) machine.inf Not Available
ROOT\RDP_KBD\0000
Terminal Server Device Redirector Yes
SYSTEM 5.2.3790.0
10/1/2002 (Standard system
devices) machine.inf Not Available
ROOT\RDPDR\0000
Direct Parallel Yes NET
5.2.3790.0 10/1/2002
Microsoft netrasa.inf Not
Available ROOT\MS_PTIMINIPORT\0000

WAN Miniport (PPTP) Yes NET
5.2.3790.0 10/1/2002
Microsoft netrasa.inf Not
Available ROOT\MS_PPTPMINIPORT\0000

WAN Miniport (PPPOE) Yes NET
5.2.3790.0 10/1/2002
Microsoft netrasa.inf Not
Available ROOT\MS_PPPOEMINIPORT\0000
WAN Miniport (IP) Yes NET
5.2.3790.0 10/1/2002
Microsoft netrasa.inf Not
Available ROOT\MS_NDISWANIP\0000

WAN Miniport (L2TP) Yes NET
5.2.3790.0 10/1/2002
Microsoft netrasa.inf Not
Available ROOT\MS_L2TPMINIPORT\0000

Video Codecs Yes MEDIA
5.2.3790.0 10/1/2002
(Standard system devices) wave.inf
Not Available
ROOT\MEDIA\MS_MMVID
Legacy Video Capture Devices Yes
MEDIA 5.2.3790.0
10/1/2002 (Standard system
devices) wave.inf Not Available
ROOT\MEDIA\MS_MMVCD
Media Control Devices Yes MEDIA
5.2.3790.0 10/1/2002
(Standard system devices) wave.inf
Not Available
ROOT\MEDIA\MS_MMMCI
Legacy Audio Drivers Yes MEDIA
5.2.3790.0 10/1/2002
(Standard system devices) wave.inf
Not Available
ROOT\MEDIA\MS_MMDRV
Audio Codecs Yes MEDIA
5.2.3790.0 10/1/2002
(Standard system devices) wave.inf
Not Available
ROOT\MEDIA\MS_MMACM
Remote Access IP ARP Driver Not
Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_WANARP\0000

volsnap Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_VOLSNAP\0000

VGA Display Controller. Not Available
LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_VGASAVE\0000

TDTCP Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_TDTCP\0000

TCP/IP Protocol Driver Not Available
LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_TCPIP\0000

tbs Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_TBS\0000

Slow Memory Measurement Not
Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_SLOWMEMORY\000
0
Simple1 Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_SIMPLE1\0000

sacdrv Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_SACDRV\0000

RDPWD Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_RDPWD\0000

RDPCDD Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_RDPCDD\0000

Remote Access Auto Connection Driver Not
Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_RASACD\0000

qldirect Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_QLDIRECT\0000

ProcInfo Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_PROCINFO\0000

Partition Manager Not Available
LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_PARTMGR\0000

Null Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_NULL\0000
NetBios over Tcpip Not Available
LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_NETBT\0000

NDProxy Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_NDPROXY\0000

NDIS Usermode I/O Protocol Not
Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_NDISUIO\0000

Remote Access NDIS TAPI Driver Not
Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_NDISTAPI\0000

NDIS System Driver Not Available
LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_NDIS\0000
mountmgr Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_MOUNTMGR\0000

memtest Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_MEMTEST\0000

lpxnds Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_LPXNDS\0000

lpxftr Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_LPXFTR\0000

ksecdd Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_KSECDD\0000

Kernel Driver Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_KRDRV\0000

IPSEC driver Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_IPSEC\0000

Smart Array Controllers Non-Miniport Disk Driver
Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_HPQCISSD\0000

Smart Array Controllers Non-Miniport Bus Driver
Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_HPQCISSB\0000

HpCISSs2 Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_HPCISSS2\0000

hpcisss Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_HPCISSS\0000

Generic Packet Classifier Not Available
LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_GPC\0000

Fips Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_FIPS\0000
em Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_EM\0000
dmload Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_DMLOAD\0000

dmboot Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_DMBOOT\0000

CRC Disk Filter Driver Not Available
LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_CRCDISK\0000

cpqcissm Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_CPQCISSM\0000

Beep Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_BEEP\0000
AFD Networking Support Environment Not
Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
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5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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BDA1B20EDE48}
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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volume.inf Not Available
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B05FCB240709}

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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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59AE196476FA}
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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Generic volume Yes VOLUME
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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Generic volume Yes VOLUME
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volume.inf Not Available
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Generic volume Yes VOLUME
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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CBBBC7C77188}
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volume.inf Not Available
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volume.inf Not Available
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Generic volume Yes VOLUME
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10/1/2002 Microsoft
volume.inf Not Available
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volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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Generic volume Yes VOLUME
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volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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Generic volume Yes VOLUME
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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10/1/2002 Microsoft
volume.inf Not Available
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9028D3631658}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0
&GPTPARTITION{ADB82DAD-C945-4230-A7E4-
91010BEDCA3C}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{7407A9FD-4075-4223-8AAE-
19F31ACC2DA4}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{5260E1D0-AFEB-4512-9CEC-
078A7C30CE17}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{67E63C4D-A6FF-484B-ACF0-
9B23E2B7E5D6}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{9E64B008-5467-4B38-92F6-
827C771AAAB8}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{882046AD-DBE2-4008-92F7-
D9AEEFF1BBB1}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{DFB776F2-6434-4A73-A880-
2EC9D98D9468}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{354721BD-35CD-469F-A99C-
E66F81CBE9F7}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{0C855A59-86BA-414A-A044-
010BA85376E3}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{C5E66EE4-1037-4B6E-B9CD-
ED63D66FD83A}

Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{2237EBC2-6BEC-4A67-904B-
57028FE9741D}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{BE911F17-0745-4CB4-A600-
3F62F337B390}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{DC2FAE22-CEC1-42CA-AE61-
3387D0AC6C19}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{3B879F8C-A13F-480F-8607-
EE01ED771F3C}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{F58B7E97-4AB5-41BC-8AF8-
F45FF8835D01}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{BB105697-9D46-42F9-94F5-
C4DAAC2EFFBD}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{79916054-A7B6-49FF-9616-
D98893344E93}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{83468164-7EC3-4C91-B7A5-
EDE6A16EF1A1}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{5865320A-987B-4AD1-97B5-
29AC050E03C7}
Generic volume Yes VOLUME
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10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{C7659FCA-EDFB-49EC-AC12-
5B408476BA55}

Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{FEEF6FE1-6E8B-4D85-AC50-
D352679082B1}
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5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{D371A01A-BCB7-4F64-8724-
0EC9E91482E2}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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0907303207D2}
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10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{DFC1E9A2-B59F-4B81-9C75-
EBBDEFE5FE72}
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10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{8FC4D9DA-4530-4531-8EFB-
DAD2B5B99E97}
Generic volume Yes VOLUME
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10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{07234C87-5416-4625-956C-
23A1184C3AC6}
Generic volume Yes VOLUME
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10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{D98CD0AB-70CE-4562-BB34-
189E1F2EBFCE}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{17E6F508-38B1-4608-AC63-
5DD6BF85FA6F}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{3CA6789C-2365-4865-BDF0-
56151A4229C6}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{D79BD124-9B3D-48BC-B376-
15B33D6CD076}

Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&SIGNATURE91064EA9OFFSETE30DCE4000LENG
THC39D9E000
Generic volume Yes VOLUME
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10/1/2002 Microsoft
volume.inf Not Available
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&SIGNATURE91064EA9OFFSET7D8200LENGTHE
30D50BE00
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10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{BD1C26B4-AD7C-446E-A954-
9E0D76545AA2}
Generic volume Yes VOLUME
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10/1/2002 Microsoft
volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0
&GPTPARTITION{3D4E1B8C-481E-49A5-8B5B-
5495ED46BD15}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0
&GPTPARTITION{B5B12E93-8C56-4DC8-A5D8-
75732881B8D8}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{FDEC90FD-162F-4EEF-BEF4-
312A45F30522}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{AE9B3B07-42CF-4A2E-854D-
36C6D9A3B193}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0
&GPTPARTITION{52FBC7FE-2322-46A2-AA53-
16297FF8D244}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{8489531B-9999-400F-B437-
2895941E45AD}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{453D6FB3-9C06-4AA5-AA51-
148C09DE27B8}

Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{540B5AF7-5DC8-4B90-A623-
C295EA4349A7}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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EEE0673D4339}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{A839616D-6F7F-4E98-B9EB-
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Generic volume Yes VOLUME
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10/1/2002 Microsoft
volume.inf Not Available
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FC0DCA5D1A9A}
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10/1/2002 Microsoft
volume.inf Not Available
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06029E42022D}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{53DB1542-BF12-480A-9D14-
C9E53DCC39DF}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{5CF57F39-719B-4145-A374-
E4D2F691639A}
Generic volume Yes VOLUME
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10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{A58F6485-384B-4275-BCD2-
1681B8CEC231}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{417C9639-0B12-4133-97BD-
CDB56ED4D404}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{A6511D04-E665-4728-8D03-
3BF2DD21750D}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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&GPTPARTITION{79E121C8-94E8-4C6D-9201-
E3B7D02BE7C5}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0
&GPTPARTITION{A8E1A87E-CEBC-45D4-8CE6-
78F71E6DC49E}
Generic volume Yes VOLUME
5.2.3790.1830
10/1/2002 Microsoft
volume.inf Not Available
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670D41B70C63}
Generic volume Yes VOLUME
5.2.3790.0 10/1/2002
Microsoft volume.inf Not
Available
STORAGE\VOLUME\1&30A96598&0
&GPTPARTITION{02340C88-DF49-11D8-8F41-
000000000000}
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5.2.3790.0 10/1/2002
Microsoft volume.inf Not
Available
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&GPTPARTITION{FF3932B0-DF48-11D8-8F41-
000000000000}
Generic volume Yes VOLUME
5.2.3790.0 10/1/2002
Microsoft volume.inf Not
Available
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&GPTPARTITION{FF392BA8-DF48-11D8-8F41-
000000000000}
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5.2.3790.0 10/1/2002
Microsoft volume.inf Not
Available
STORAGE\VOLUME\1&30A96598&0
&GPTPARTITION{FF392310-DF48-11D8-8F41-
000000000000}
Volume Manager Yes SYSTEM
5.2.3790.0 10/1/2002
(Standard system devices)
machine.inf Not Available
ROOT\FTDISK\0000
Logical Disk Manager Yes SYSTEM
5.2.3790.0 10/1/2002
(Standard system devices)
machine.inf Not Available
ROOT\DMIO\0000
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0\15
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0\14
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0\13
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0\12
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0\11
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0\10
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0_9
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0_8
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0_7
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0_6
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0_5
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0_4
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0_3
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor
types) cpu.inf Not Available
ACPI\GENUINEINTEL_-
_IA64_FAMILY_32_MODEL_0_2

Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor types) cpu.inf Not Available
ACPI\GENUINEINTEL_-_IA64_FAMILY_32_MODEL_0_1
Processor Yes PROCESSOR
5.2.3790.1830
10/1/2002 (Standard processor types) cpu.inf Not Available
ACPI\GENUINEINTEL_-_IA64_FAMILY_32_MODEL_0_0
ACPI Fixed Feature Button Yes SYSTEM
5.2.3790.0 10/1/2002
(Standard system devices) machine.inf Not Available
ACPI\FIXEDBUTTON\2&DABA3FF&0

Qlogic processor device Yes SYSTEM
5.2.3790.1830
10/1/2002 QLOGIC
scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&PROD_PSEUDO_DEVICE&REV_\5&2FF938CE&0&07F0
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&2FF938CE&0&012
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&2FF938CE&0&011
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-Packard Company oem11.inf Not Available
SCSI\ARRAY&VEN_COMPAQ&PROD_MSA1000&REV_4.48\5&2FF938CE&0&010

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&2FF938CE&0&002
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&2FF938CE&0&001
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-Packard Company oem11.inf Not Available
SCSI\ARRAY&VEN_COMPAQ&PROD_MSA1000&REV_4.48\5&2FF938CE&0&000

QLogic Fibre Channel Adapter Yes
SCSIADAPTER 9.0.2.11
3/8/2005 QLogic
oem13.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&5D9CB86&0&09

Qlogic processor device Yes SYSTEM
5.2.3790.1830
10/1/2002 QLOGIC
scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&PROD_PSEUDO_DEVICE&REV_\5&7181F6C&0&07F0
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&7181F6C&0&012
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&7181F6C&0&011
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-Packard Company oem11.inf Not Available
SCSI\ARRAY&VEN_COMPAQ&PROD_MSA1000&REV_4.48\5&7181F6C&0&010

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
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5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&7181F6C&0&001
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-Packard Company oem11.inf Not Available
SCSI\ARRAY&VEN_COMPAQ&PROD_MSA1000&REV_4.48\5&7181F6C&0&000

QLogic Fibre Channel Adapter Yes
SCSIADAPTER 9.0.2.11
3/8/2005 QLogic
oem13.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&5D9CB86&0&08
PCI bus Yes SYSTEM
5.2.3790.0 10/1/2002
(Standard system devices) machine.inf Not Available
ACPI\HWP0002\600
Qlogic processor device Yes SYSTEM
5.2.3790.1830
10/1/2002 QLOGIC
scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&PROD_PSEUDO_DEVICE&REV_\5&26373378&0&07F0
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&26373378&0&012

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&26373378&0&011
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-Packard Company oem11.inf Not Available
SCSI\ARRAY&VEN_COMPAQ&PROD_MSA1000&REV_4.48\5&26373378&0&010

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5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
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Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
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StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-Packard Company oem11.inf Not Available
SCSI\ARRAY&VEN_COMPAQ&PROD_MSA1000&REV_4.48\5&26373378&0&000

QLogic Fibre Channel Adapter Yes
SCSIADAPTER 9.0.2.11
3/8/2005 QLogic
oem13.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS_01010E11&REV_02\4&24543408&0&11
Qlogic processor device Yes SYSTEM
5.2.3790.1830
10/1/2002 QLOGIC
scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&PROD_PSEUDO_DEVICE&REV_\5&38F0E41D&0&07F0
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&38F0E41D&0&012
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_MSA1000_VOLUME&REV_4.48\5&38F0E41D&0&011
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-Packard Company oem11.inf Not Available
SCSI\ARRAY&VEN_COMPAQ&PROD_MSA1000&REV_4.48\5&38F0E41D&0&010

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&38F0E41D&0&0
02
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&38F0E41D&0&0
01
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&38F0E41D&0&000

QLogic Fibre Channel Adapter Yes
SCSIADAPTER 9.0.2.11
3/8/2005 QLogic
oem13.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS
_01010E11&REV_02\4&24543408&0&10
Qlogic processor device Yes SYSTEM
5.2.3790.1830
10/1/2002 QLOGIC
scsidev.inf Not Available
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ROD_PSEUDO_DEVICE&REV_\5&9A56C22&0&07
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5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
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MSA1000_VOLUME&REV_4.48\5&9A56C22&0&01
2
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&9A56C22&0&01
1
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&9A56C22&0&010

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
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MSA1000_VOLUME&REV_4.48\5&9A56C22&0&00
2
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&9A56C22&0&00
1

StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&9A56C22&0&000
QLogic Fibre Channel Adapter Yes
SCSIADAPTER 9.0.2.11
3/8/2005 QLogic
oem13.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS
_01010E11&REV_02\4&24543408&0&09
Qlogic processor device Yes SYSTEM
5.2.3790.1830
10/1/2002 QLOGIC
scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&P
ROD_PSEUDO_DEVICE&REV_\5&1C5F1CC7&0&0
7F0

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&1C5F1CC7&0&0
02
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&1C5F1CC7&0&0
01
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&1C5F1CC7&0&000

QLogic Fibre Channel Adapter Yes
SCSIADAPTER 9.0.2.11
3/8/2005 QLogic
oem13.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS
_01010E11&REV_02\4&24543408&0&08
PCI bus Yes SYSTEM
5.2.3790.0 10/1/2002
(Standard system devices)
machine.inf Not Available
ACPI\HWP0002\500
Qlogic processor device Yes SYSTEM
5.2.3790.1830
10/1/2002 QLOGIC
scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&P
ROD_PSEUDO_DEVICE&REV_\5&14539C3B&0&0
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Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&14539C3B&0&0
12
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&14539C3B&0&0
11

StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&14539C3B&0&010
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&14539C3B&0&0
02
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&14539C3B&0&0
01

StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&14539C3B&0&000

QLogic Fibre Channel Adapter Yes
SCSIADAPTER 9.0.2.11
3/8/2005 QLogic
oem13.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS
_01010E11&REV_02\4&15291AB&0&11
Qlogic processor device Yes SYSTEM
5.2.3790.1830
10/1/2002 QLOGIC
scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&P
ROD_PSEUDO_DEVICE&REV_\5&199EB96&0&07
F0
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&199EB96&0&01
2
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&199EB96&0&01
1
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&199EB96&0&010

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
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2

Disk drive Yes DISKDRIVE
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Not Available
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StorageWorks MSA1000 Yes SYSTEM
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Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
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QLogic Fibre Channel Adapter Yes
SCSIADAPTER 9.0.2.11
3/8/2005 QLogic
oem13.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS
_01010E11&REV_02\4&15291AB&0&10
Emulex LightPulse HBA - Storport Miniport Driver
Yes SCSIADAPTER
6.1.11.101 11/7/2005 Emulex
oem29.inf Not Available
PCI\VEN_10DF&DEV_F0A5&SUBSY
S_F0A510DF&REV_01\4&15291AB&0&09

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&17E26096&0&0
01
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&17E26096&0&000

Emulex LightPulse HBA - Storport Miniport Driver
Yes SCSIADAPTER
6.1.11.101 11/7/2005 Emulex
oem29.inf Not Available
PCI\VEN_10DF&DEV_F0A5&SUBSY
S_F0A510DF&REV_01\4&15291AB&0&08

PCI bus Yes SYSTEM
5.2.3790.0 10/1/2002
(Standard system devices)
machine.inf Not Available
ACPI\HWP0002\400
Qlogic processor device Yes SYSTEM
5.2.3790.1830
10/1/2002 QLOGIC
scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&P
ROD_PSEUDO_DEVICE&REV_\5&24BC464F&0&0
7F0
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&24BC464F&0&0
02
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&24BC464F&0&0
01

StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&24BC464F&0&000
QLogic Fibre Channel Adapter Yes
SCSIADAPTER 9.0.2.11
3/8/2005 QLogic
oem13.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS
_01010E11&REV_02\4&915E908&0&09
Qlogic processor device Yes SYSTEM
5.2.3790.1830
10/1/2002 QLOGIC
scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&P
ROD_PSEUDO_DEVICE&REV_\5&120295AA&0&0
7F0

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&120295AA&0&0
12

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&120295AA&0&0
11
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&120295AA&0&010

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&120295AA&0&0
02
Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_COMPAQ&PROD_
MSA1000_VOLUME&REV_4.48\5&120295AA&0&0
01
StorageWorks MSA1000 Yes SYSTEM
5.22.0.64 8/20/2003 Hewlett-
Packard Company oem11.inf Not
Available
SCSI\ARRAY&VEN_COMPAQ&PROD
_MSA1000&REV_4.48\5&120295AA&0&000

QLogic Fibre Channel Adapter Yes
SCSIADAPTER 9.0.2.11
3/8/2005 QLogic
oem13.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS
_01010E11&REV_02\4&915E908&0&08
PCI bus Yes SYSTEM
5.2.3790.0 10/1/2002
(Standard system devices)
machine.inf Not Available
ACPI\HWP0002\200

Intel(R) PRO/1000 MT Dual Port Server Adapter
Yes NET 7.2.17.0
8/14/2003 Intel oem7.inf
Not Available
PCI\VEN_8086&DEV_1079&SUBSYS
_12A6103C&REV_03\4&2C178B65&0&11
Intel(R) PRO/1000 MT Dual Port Server Adapter
Yes NET 7.2.17.0
8/14/2003 Intel oem7.inf
Not Available
PCI\VEN_8086&DEV_1079&SUBSYS
_12A6103C&REV_03\4&2C178B65&0&10

LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-
66 Device Yes SCSIADAPTER
5.9.6.0 10/15/2003 LSI
Logic oem2.inf Not Available
PCI\VEN_1000&DEV_0021&SUBSYS
_1340103C&REV_01\4&2C178B65&0&09

Disk drive Yes DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_HP_36.4G&PROD_
MAS3367NC&REV_HPC3\5&1C98B321&0&000

LSI Logic Ultra160 PCI SCSI Adapter; 53C1010-
66 Device Yes SCSIADAPTER
5.9.6.0 10/15/2003 LSI
Logic oem2.inf Not Available
PCI\VEN_1000&DEV_0021&SUBSYS
_1340103C&REV_01\4&2C178B65&0&08

PCI bus Yes SYSTEM
5.2.3790.0 10/1/2002
(Standard system devices)
machine.inf Not Available
ACPI\HWP0002\100
Default Monitor Yes
MONITOR 5.1.2001.0
6/6/2001 (Standard monitor
types) monitor.inf Not Available
DISPLAY\DEFAULT_MONITOR\5&C
AFE5DC&0&10000000&00&04
RADEON 7000 SERIES Yes DISPLAY
6.14.10.6368 6/20/2003 ATI
Technologies Inc. oem3.inf Not
Available
PCI\VEN_1002&DEV_5159&SUBSYS
_1292103C&REV_00\4&4F5EBC7&0&20
CD-ROM Drive Yes CDROM
5.2.3790.0 10/1/2002
(Standard CD-ROM drives)
cdrom.inf Not Available
IDE\CDROMTEAC_DV-28E-
B_____2.2B____\6&F
C5EAC&0&0.0.0
Primary IDE Channel Yes HDC
5.2.3790.0 10/1/2002
(Standard IDE ATA/ATAPI
controllers) mshdc.inf Not Available
PCIIDE\IDECHANNEL\5&2F7BD88F
&0&0
CMD PCI-0649 Ultra DMA IDE Controller Yes
HDC 5.2.3790.0
10/1/2002 CMD Technology
mshdc.inf Not Available
PCI\VEN_1095&DEV_0649&SUBSYS
_06491095&REV_02\4&4F5EBC7&0&18

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USB Root Hub                    Yes             USB
                5.2.3790.0      10/1/2002
                (Standard USB Host Controller)
                usbport.inf     Not Available
                USB\ROOT_HUB20\5&A2C724A&0

NEC PCI to USB Enhanced Host Controller (B1)
                Yes             USB
                5.2.3790.0      10/1/2002       NEC
                usbport.inf     Not Available
                PCI\VEN_1033&DEV_00E0&SUBSYS
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USB Root Hub                    Yes             USB
                5.2.3790.0      10/1/2002
                (Standard USB Host Controller)
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                USB\ROOT_HUB\5&13219F04&0

NEC PCI to USB Open Host Controller     Yes
                USB             5.2.3790.0
                10/1/2002       NEC
                usbport.inf     Not Available
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_00351033&REV_41\4&4F5EBC7&0&11
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                (Standard USB Host Controller)
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                USB\ROOT_HUB\5&67EE5F&0

NEC PCI to USB Open Host Controller     Yes
                USB             5.2.3790.0
                10/1/2002       NEC
                usbport.inf     Not Available
                PCI\VEN_1033&DEV_0035&SUBSYS
_00351033&REV_41\4&4F5EBC7&0&10
HP Management Processor Yes             SYSTEM
                5.0.3790.0      7/10/2003       Hewlett-
Packard Co      oem0.inf        Not Available
                PCI\VEN_103C&DEV_1048&SUBSYS
_1282103C&REV_03\4&4F5EBC7&0&09
HP MP Serial AUX/UPS PortYes            PORTS
                5.0.3663.16     12/12/2002      Hewlett
Packard Co.     oem1.inf        Not Available
                PCI\VEN_103C&DEV_1290&SUBSYS
_1291103C&REV_01\4&4F5EBC7&0&08
PCI bus         Yes             SYSTEM
                5.2.3790.0      10/1/2002
                (Standard system devices)
                machine.inf     Not Available
                ACPI\HWP0002\0
HP Baseboard Management Controller Interface
Driver          Yes             SYSTEM
                7.1.3790.0      3/18/2004       Hewlett
Packard Co.     oem12.inf       Not Available
                ACPI\IPI0001\0
Generic Bus     Yes             SYSTEM
                5.2.3790.0      10/1/2002
                (Standard system devices)
                machine.inf     Not Available
                ACPI\HWP0001\0
ACPI Thermal Zone               Yes             SYSTEM
                5.2.3790.0      10/1/2002
                (Standard system devices)
                machine.inf     Not Available
                ACPI\THERMALZONE\THM0

Microsoft ACPI-Compliant System         Yes
                SYSTEM          5.2.3790.0
                10/1/2002       Microsoft       acpi.inf
                Not Available   ACPI_HAL\PNP0C08\0

ACPI IA64-based PC              Yes
                COMPUTER        5.2.3790.0
                10/1/2002       (Standard computers)
                hal.inf         Not Available
Not Available   Not Available   Not Available   Not
Available       Not Available   Not Available   Not
Available       Not Available   HTREE\ROOT\0


[Environment Variables]

Variable        Value           User Name
ClusterLog      C:\WINDOWS\Cluster\cluster.log
                <SYSTEM>
ComSpec         %SystemRoot%\system32\cmd.exe
                <SYSTEM>
FP_NO_HOST_CHECK        NO
                <SYSTEM>
lib             C:\Program Files\SQLXML 4.0\bin\
                <SYSTEM>
NUMBER_OF_PROCESSORS            16
                <SYSTEM>
OS              Windows_NT <SYSTEM>
Path
                %SystemRoot%\system32;%Syste
mRoot%;%SystemRoot%\System32\Wbem;C:\Pr
ogram Files\Microsoft SQL
Server\MSSQL.1\MSSQL\Binn;C:\Program Files
(x86)\Microsoft SQL
Server\80\Tools\Binn\;C:\Program Files\Microsoft
SQL Server\90\Tools\binn\;C:\Program Files
(x86)\Microsoft SQL
Server\90\Tools\binn\;C:\Program Files
(x86)\Microsoft SQL
Server\90\DTS\Binn\;C:\Program Files
(x86)\Microsoft SQL
Server\90\Tools\Binn\VSShell\Common7\IDE\
                <SYSTEM>

PATHEXT
                .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.J
S;.JSE;.WSF;.WSH        <SYSTEM>
PROCESSOR_ARCHITECTURE          IA64
                <SYSTEM>
PROCESSOR_IDENTIFIER    ia64 Family 32 Model
0 Stepping 4, GenuineIntel      <SYSTEM>
PROCESSOR_LEVEL         32
                <SYSTEM>
PROCESSOR_REVISION      0004
                <SYSTEM>
TEMP            %SystemRoot%\TEMP
                <SYSTEM>
TMP             %SystemRoot%\TEMP
                <SYSTEM>
windir          %SystemRoot%
                <SYSTEM>
TEMP            %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\SYSTEM
TMP             %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\SYSTEM
TEMP            %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\LOCAL SERVICE
TMP             %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\LOCAL SERVICE
TEMP            %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\NETWORK SERVICE
TMP             %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\NETWORK SERVICE
_NT_SYMBOL_PATH         g:\1830.pri\retail
TEMP            %USERPROFILE%\Local
Settings\Temp           SQLDIABLO\Administrator
TMP             %USERPROFILE%\Local
Settings\Temp           SQLDIABLO\Administrator


[Print Jobs]

Document        Size            Owner           Notify
                Status          Time Submitted
                Start Time      Until Time      Elapsed
Time            Pages Printed                   Job ID
                Priority        Parameters      Driver
                Print Processor                 Host
Print Queue     Data Type       Name

[Network Connections]

Local Name      Remote Name                     Type
                Status          User Name
Z:              \\olymaster\f$                  Disk
                Persistent Connection
                SQLDIABLO\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   Not Available   Not
Available       Not Available
system          Not Available   4               8
                0               2826240         Not
Available       Not Available   Not Available   Not
Available
smss.exe        Not Available   384             11
                409600          2826240
                3/6/2006 3:07 PM                Not
Available       Not Available   Not Available
csrss.exe       Not Available   432             13
                Not Available   Not Available
                3/6/2006 3:07 PM                Not
Available       Not Available   Not Available
winlogon.exe    c:\windows\system32\winlogon.exe
                460             13              409600
                2826240         3/6/2006 3:07 PM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             664.50
KB (680,448 bytes)              7/14/2005 4:58 PM

services.exe    c:\windows\system32\services.exe
                504             9               409600
                2826240         3/6/2006 3:07 PM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             300.00
KB (307,200 bytes)              4/8/2004 1:48 PM

lsass.exe       c:\windows\system32\lsass.exe
                516             9               409600
                2826240         3/6/2006 3:07 PM
                5.2.3790.0 (srv03_rtm.030324-
2048)           15.00 KB (15,360 bytes)
                4/8/2004 1:48 PM
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svchost.exe c:\windows\system32\svchost.exe
708 8 409600
2826240 3/6/2006 3:07 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 36.00 KB
(36,864 bytes) 7/14/2005 4:58 PM

svchost.exe Not Available 760 8
Not Available Not Available
3/6/2006 3:07 PM Not
Available Not Available Not Available
svchost.exe Not Available 816 8
Not Available Not Available
3/6/2006 3:07 PM Not
Available Not Available Not Available
svchost.exe Not Available 852 8
Not Available Not Available
3/6/2006 3:07 PM Not
Available Not Available Not Available
svchost.exe c:\windows\system32\svchost.exe
880 8 409600
2826240 3/6/2006 3:07 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 36.00 KB
(36,864 bytes) 7/14/2005 4:58 PM

msdtc.exe Not Available 980 8
Not Available Not Available
3/6/2006 3:07 PM Not
Available Not Available Not Available
msftesql.exe c:\program files\microsoft sql
server\mssql.1\mssql\binn\msftesql.exe 1308
8 409600 2826240
3/6/2006 3:07 PM
12.0.6116.0 285.20 KB (292,048
bytes) 1/16/2006 3:28 AM
svchost.exe c:\windows\system32\svchost.exe
1628 8 409600
2826240 3/6/2006 3:07 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 36.00 KB
(36,864 bytes) 7/14/2005 4:58 PM

csrss.exe Not Available 1884 13
Not Available Not Available
3/6/2006 3:08 PM Not
Available Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe
1908 13 409600
2826240 3/6/2006 3:08 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 664.50
KB (680,448 bytes) 7/14/2005 4:58 PM

rdpclip.exe c:\windows\system32\rdpclip.exe
320 8 409600
2826240 3/6/2006 3:08 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 211.00
KB (216,064 bytes) 7/14/2005 4:58 PM

explorer.exe c:\windows\explorer.exe 960
8 409600 2826240
3/6/2006 3:08 PM
6.00.3790.1830
(srv03_sp1_rtm.050324-1447) 1.64 MB
(1,720,320 bytes) 7/14/2005 5:01 PM

wmiprvse.exe Not Available 1864
8 Not Available Not
Available 3/6/2006 3:08 PM Not
Available Not Available Not Available

cmd.exe c:\windows\system32\cmd.exe
1804 8 409600
2826240 3/6/2006 3:08 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 507.50
KB (519,680 bytes) 4/8/2004 1:48 PM
sqlservr.exe c:\program files\microsoft sql
server\mssql.1\mssql\binn\sqlservr.exe 392
8 409600 2826240
3/6/2006 3:08 PM
2005.090.2028.00 69.19
MB (72,549,080 bytes) 1/26/2006 11:38 AM

cmd.exe c:\windows\system32\cmd.exe
2644 8 409600
2826240 3/6/2006 3:08 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 507.50
KB (519,680 bytes) 4/8/2004 1:48 PM

osql.exe c:\program files\microsoft sql
server\90\tools\binn\osql.exe 2652
8 409600 2826240
3/6/2006 3:08 PM
2005.090.2028.00 120.21
KB (123,096 bytes) 1/26/2006 11:34 AM

logon.scr Not Available 2836 4
Not Available Not Available
3/6/2006 3:18 PM Not
Available Not Available Not Available
cmd.exe c:\windows\system32\cmd.exe
3144 8 409600
2826240 3/6/2006 3:45 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 507.50
KB (519,680 bytes) 4/8/2004 1:48 PM

mmc.exe c:\windows\system32\mmc.exe
3408 8 409600
2826240 3/6/2006 3:58 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 2.51 MB
(2,631,168 bytes) 7/14/2005 4:59 PM

wmiprvse.exe Not Available 3596
8 Not Available Not
Available 3/6/2006 4:03 PM Not
Available Not Available Not Available
msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
3860 8 409600
2826240 3/6/2006 4:04 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 72.00 KB
(73,728 bytes) 7/14/2005 4:58 PM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
3876 8 409600
2826240 3/6/2006 4:04 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 72.00 KB
(73,728 bytes) 7/14/2005 4:58 PM

[Loaded Modules]

Name Version Size File Date
Manufacturer Path

winlogon 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 664.50
KB (680,448 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\winlogon.exe
ntdll 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 1.56 MB
(1,638,400 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\ntdll.dll

kernel32 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 1.87 MB
(1,965,056 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\kernel32.dll

msvcrt 7.0.3790.1830
(srv03_sp1_rtm.050324-1447) 932.00
KB (954,368 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msvcrt.dll

advapi32 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 1.41 MB
(1,482,752 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\advapi32.dll

rpcrt4 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 2.34 MB
(2,457,600 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\rpcrt4.dll

user32 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 1.41 MB
(1,476,096 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\user32.dll

gdi32 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 882.00
KB (903,168 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\gdi32.dll

userenv 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 1.49 MB
(1,563,648 bytes) 4/8/2004 1:49 PM
Microsoft Corporation
c:\windows\system32\userenv.dll

nddeapi 5.2.3790.0 (srv03_rtm.030324-
2048) 39.50 KB (40,448 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\nddeapi.dll

crypt32 5.131.3790.1830
(srv03_sp1_rtm.050324-1447) 1.68 MB
(1,759,232 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\crypt32.dll

msasn1 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 179.50
KB (183,808 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msasn1.dll

secur32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 186.00 KB (190,464 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\secur32.dll

winsta 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 143.50 KB (146,944 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\winsta.dll

netapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 885.50 KB (906,752 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\netapi32.dll

profmap 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 59.50 KB (60,928 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\profmap.dll

regapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 141.50 KB (144,896 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\regapi.dll

ws2_32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 248.00 KB (253,952 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\ws2_32.dll

ws2help 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 51.00 KB (52,224 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\ws2help.dll

msgina 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.40 MB (1,465,344 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msgina.dll

shsvcs 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 354.50 KB (363,008 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\shsvcs.dll

shlwapi 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 804.00 KB (823,296 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\shlwapi.dll

sfc 5.2.3790.0 (srv03_rtm.030324-2048) 7.50 KB (7,680 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\sfc.dll

sfc_os 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 273.00 KB (279,552 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\sfc_os.dll

wintrust 5.131.3790.1830 (srv03_sp1_rtm.050324-1447) 459.50 KB (470,528 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\wintrust.dll

imagehlp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 140.50 KB (143,872 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\imagehlp.dll

ole32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 3.81 MB (3,992,064 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\ole32.dll

comctl32 6.0 (srv03_sp1_rtm.050324-1447) 2.50 MB (2,622,976 bytes) 4/8/2005 10:05 AM
Microsoft Corporation
c:\windows\winsxs\ia64_microsoft.windows.common-controls_6595b64144ccf1df_6.0.3790.1830_x-ww_aa3e736f\comctl32.dll

winscard 5.2.3790.0 (srv03_rtm.030324-2048) 291.50 KB (298,496 bytes) 4/8/2004 1:49 PM
Microsoft Corporation
c:\windows\system32\winscard.dll

wtsapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 54.00 KB (55,296 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\wtsapi32.dll

version 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 51.00 KB (52,224 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\version.dll

sxs 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.82 MB (1,904,640 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\sxs.dll

shell32 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 12.63 MB (13,243,392 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\shell32.dll

setupapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.99 MB (2,086,400 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\setupapi.dll

wldap32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 441.50 KB (452,096 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\wldap32.dll

cscdll 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 207.00 KB (211,968 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\cscdll.dll

dimsntfy 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 51.50 KB (52,736 bytes) 7/14/2005 5:03 PM
Microsoft Corporation
c:\windows\system32\dimsntfy.dll

wlnotify 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 239.50 KB (245,248 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\wlnotify.dll

winmm 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 428.00 KB (438,272 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\winmm.dll

winspool 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 400.50 KB (410,112 bytes) 4/8/2004 1:49 PM
Microsoft Corporation
c:\windows\system32\winspool.drv

mpr 5.2.3790.0 (srv03_rtm.030324-2048) 163.00 KB (166,912 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\mpr.dll

oleaut32 5.2.3790.1830 3.75 MB (3,930,624 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\oleaut32.dll

comctl32 5.82 (srv03_sp1_rtm.050324-1447) 1.72 MB (1,806,336 bytes) 4/8/2005 10:05 AM
Microsoft Corporation
c:\windows\winsxs\ia64_microsoft.windows.common-controls_6595b64144ccf1df_5.82.3790.1830_x-ww_4aca2dea\comctl32.dll

uxtheme 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 543.00 KB (556,032 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\uxtheme.dll

scredir 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 69.00 KB (70,656 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\scredir.dll

samlib 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 106.50 KB (109,056 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\samlib.dll

clbcatq 2001.12.4720.1830 (srv03_sp1_rtm.050324-1447) 1.30 MB (1,359,360 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\clbcatq.dll

comres 2001.12.4720.0 (srv03_rtm.030324-2048) 779.50 KB (798,208 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\comres.dll

cscui 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 628.00 KB (643,072 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\cscui.dll

drprov 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 32.50 KB (33,280 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\drprov.dll

ntlanman 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 117.00 KB (119,808 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\ntlanman.dll

netui0 5.2.3790.0 (srv03_rtm.030324-2048) 181.50 KB (185,856 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\netui0.dll

netui1 5.2.3790.0 (srv03_rtm.030324-2048) 482.00 KB (493,568 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\netui1.dll

rdpsnd 5.2.3790.0 (srv03_rtm.030324-2048) 63.00 KB (64,512 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\rdpsnd.dll

psapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 53.00 KB (54,272 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\psapi.dll

davclnt 5.2.3790.0 (srv03_rtm.030324-2048) 59.00 KB (60,416 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\davclnt.dll

mprui 5.2.3790.0 (srv03_rtm.030324-2048) 97.00 KB (99,328 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\mprui.dll

netui2 5.2.3790.0 (srv03_rtm.030324-2048) 761.50 KB (779,776 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\netui2.dll

comdlg32 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 745.50 KB (763,392 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\comdlg32.dll

netmsg 5.2.3790.0 (srv03_rtm.030324-2048) 177.50 KB (181,760 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\netmsg.dll

msacm32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 87.00 KB (89,088 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msacm32.drv

msacm32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 276.50 KB (283,136 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msacm32.dll

imaadp32 5.2.3790.0 (srv03_rtm.030324-2048) 55.00 KB (56,320 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\imaadp32.acm

msadp32 5.2.3790.0 (srv03_rtm.030324-2048) 49.00 KB (50,176 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\msadp32.acm

msg711 5.2.3790.0 (srv03_rtm.030324-2048) 33.00 KB (33,792 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\msg711.acm

msgsm32 5.2.3790.0 (srv03_rtm.030324-2048) 66.50 KB (68,096 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\msgsm32.acm

tssoft32 1.01 29.00 KB (29,696 bytes) 4/8/2004 1:49 PM DSP GROUP, INC. c:\windows\system32\tssoft32.acm

tsd32 1.03 38.00 KB (38,912 bytes) 4/8/2004 1:49 PM DSP GROUP, INC. c:\windows\system32\tsd32.dll

ntmarta 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 366.00 KB (374,784 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\ntmarta.dll

xpsp2res 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.76 MB (2,897,920 bytes) 7/14/2005 5:02 PM
Microsoft Corporation
c:\windows\system32\xpsp2res.dll

services 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 300.00 KB (307,200 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\services.exe

scesrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 806.50 KB (825,856 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\scesrv.dll

authz 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 220.50 KB (225,792 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\authz.dll

umpnpmgr 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 323.50 KB (331,264 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\umpnpmgr.dll

ncobjapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 121.00 KB (123,904 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\ncobjapi.dll

msvcp60 6.10.2240.8 941.50 KB (964,096 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\msvcp60.dll

eventlog 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 180.00 KB (184,320 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\eventlog.dll

lsass 5.2.3790.0 (srv03_rtm.030324-2048) 15.00 KB (15,360 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\lsass.exe

lsasrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.07 MB (2,166,784 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\lsasrv.dll

ntdsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 204.50 KB (209,408 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\ntdsapi.dll

dnsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 428.00 KB (438,272 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\dnsapi.dll

samsrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.09 MB (1,142,784 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\samsrv.dll

cryptdll 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 68.50 KB (70,144 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\cryptdll.dll

msprivs 5.2.3790.0 (srv03_rtm.030324-2048) 46.00 KB (47,104 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\msprivs.dll

kerberos 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 932.00 KB (954,368 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\kerberos.dll

msv1_0 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 380.00 KB (389,120 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msv1_0.dll

iphlpapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 254.50 KB (260,608 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\iphlpapi.dll

netlogon 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 956.00 KB (978,944 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\netlogon.dll

w32time 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 565.00 KB (578,560 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\w32time.dll

schannel 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 456.00 KB (466,944 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\schannel.dll

wdigest 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 210.00 KB (215,040 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\wdigest.dll

rsaenh 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 415.98 KB (425,960 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\rsaenh.dll

rassfm 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 68.50 KB (70,144 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\rassfm.dll

kdcsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 596.00 KB (610,304 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\kdcsvc.dll

ntdsa 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 4.04 MB (4,239,360 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\ntdsa.dll

esent 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.65 MB (2,776,064 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\esent.dll

ntdsatq 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 79.50 KB (81,408 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\ntdsatq.dll

mswsock 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 763.00 KB (781,312 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\mswsock.dll

scecli 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 459.50 KB (470,528 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\scecli.dll

ws03res 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 792.50 KB (811,520 bytes) 7/14/2005 5:03 PM
Microsoft Corporation
c:\windows\system32\ws03res.dll

hnetcfg 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.04 MB (1,094,144 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\hnetcfg.dll

wshtcpip 5.2.3790.0 (srv03_rtm.030324-2048) 38.00 KB (38,912 bytes) 4/8/2004 1:49 PM
Microsoft Corporation
c:\windows\system32\wshtcpip.dll

ipsecsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 465.00 KB (476,160 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\ipsecsvc.dll

oakley 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 516.50 KB (528,896 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\oakley.dll

winipsec 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 83.00 KB (84,992 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\winipsec.dll

pstorsvc 5.2.3790.0 (srv03_rtm.030324-2048) 56.00 KB (57,344 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\pstorsvc.dll

psbase 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 167.50 KB (171,520 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\psbase.dll

dssenh 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 363.98 KB (372,712 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\dssenh.dll

wlbsctrl 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 207.00 KB (211,968 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\wlbsctrl.dll

svchost 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 36.00 KB (36,864 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\svchost.exe

rpcss 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 823.50 KB (843,264 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\rpcss.dll

schedsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 567.00 KB (580,608 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\schedsvc.dll

msidle 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 11.50 KB (11,776 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msidle.dll

wkssvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 315.50 KB (323,072 bytes) 4/8/2004 1:49 PM
Microsoft Corporation
c:\windows\system32\wkssvc.dll

wiarpc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 76.00 KB (77,824 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\wiarpc.dll

cryptsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 139.00 KB (142,336 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\cryptsvc.dll

certcli 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 580.00 KB (593,920 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\certcli.dll

atl 3.00.2282 348.00 KB (356,352 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\atl.dll

vssapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.57 MB (1,642,496 bytes) 7/14/2005 5:02 PM
Microsoft Corporation
c:\windows\system32\vssapi.dll

dmserver 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 52.00 KB (53,248 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\dmserver.dll

srvsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 197.50 KB (202,240 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\srvsvc.dll

hidserv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 69.50 KB (71,168 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\hidserv.dll

hid 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 55.50 KB (56,832 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\hid.dll

es 2001.12.4720.1830 (srv03_sp1_rtm.050324-1447) 685.50 KB (701,952 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\es.dll

sacsvr 5.2.3790.0 (srv03_rtm.030324-2048) 27.50 KB (28,160 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\sacsvr.dll

sens 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 98.00 KB (100,352 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\sens.dll

trkwks 5.2.3790.0 (srv03_rtm.030324-2048) 246.00 KB (251,904 bytes)
4/8/2004 1:49 PM
Microsoft Corporation
c:\windows\system32\trkwks.dll

wmisvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 445.50 KB (456,192 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\wmisvc.dll

comsvcs 2001.12.4720.1830 (srv03_sp1_rtm.050324-1447) 3.15 MB (3,300,352 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\comsvcs.dll

browser 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 200.50 KB (205,312 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\browser.dll

netrap 5.2.3790.0 (srv03_rtm.030324-2048) 30.00 KB (30,720 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\netrap.dll

netman 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 706.50 KB (723,456 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\netman.dll

netshell 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.95 MB (3,094,528 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\netshell.dll

rtutils 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 91.50 KB (93,696 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\rtutils.dll

credui 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 311.00 KB (318,464 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\credui.dll

clusapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 158.00 KB (161,792 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\clusapi.dll

mprapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 265.00 KB (271,360 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\mprapi.dll

activeds 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 581.50 KB (595,456 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\activeds.dll

adsldpc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 326.00 KB (333,824 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\adsldpc.dll

rasapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 632.50 KB (647,680 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\rasapi32.dll

rasman 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 170.00 KB (174,080 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\rasman.dll

tapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 518.00 KB (530,432 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\tapi32.dll

wzcsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 818.00 KB (837,632 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\wzcsvc.dll

wmi 5.2.3790.0 (srv03_rtm.030324-2048) 5.00 KB (5,120 bytes)
4/8/2004 1:49 PM
Microsoft Corporation
c:\windows\system32\wmi.dll

dhcpcsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 299.50 KB (306,688 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\dhcpcsvc.dll

wininet 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 1.62 MB (1,697,280 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\wininet.dll

wzcsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 86.50 KB (88,576 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\wzcsapi.dll

wbemcomn 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 665.50 KB (681,472 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\wbemcomn.dll

wbemcore 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.94 MB (2,038,784 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\wbemcore.dll

esscli 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.01 MB (1,057,280 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\esscli.dll

fastprox 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.63 MB (1,710,592 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\fastprox.dll

wbemsvc 5.2.3790.0 (srv03_rtm.030324-2048) 62.50 KB (64,000 bytes)
4/8/2004 2:05 PM
Microsoft Corporation
c:\windows\system32\wbem\wbemsvc.dll

wmiutils 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 302.00 KB (309,248 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\wmiutils.dll

repdrvfs 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 649.00 KB (664,576 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\repdrvfs.dll

wmiprvsd 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.39 MB (1,454,592 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\wmiprvsd.dll

wbemess 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.02 MB (1,070,080 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\wbemess.dll

ncprov 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 146.00 KB (149,504 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\ncprov.dll

rasdlg 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.44 MB (1,509,888 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\rasdlg.dll

rasadhlp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 18.00 KB (18,432 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\rasadhlp.dll

ntlsapi 5.2.3790.0 (srv03_rtm.030324-2048) 14.50 KB (14,848 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\ntlsapi.dll

netcfgx 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.01 MB (2,104,320 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\netcfgx.dll

wbemcons 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 154.50 KB (158,208 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\wbemcons.dll

pchsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 113.00 KB (115,712 bytes) 7/14/2005 5:02 PM
Microsoft Corporation
c:\windows\pchealth\helpctr\binaries\pchsvc.dll

msftesql 12.0.6116.0 285.20 KB (292,048 bytes) 1/16/2006 3:28 AM
Microsoft Corporation
c:\program files\microsoft sql server\mssql.1\mssql\binn\msftesql.exe

msfte 12.0.6116.0 6.74 MB (7,068,880 bytes) 1/16/2006 3:28 AM
Microsoft Corporation
c:\program files\microsoft sql server\mssql.1\mssql\binn\msfte.dll

dbghelp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.15 MB (2,257,920 bytes) 4/8/2005 10:03 AM
Microsoft Corporation
c:\windows\system32\dbghelp.dll

msftepxy 12.0.6116.0 129.70 KB (132,816 bytes) 1/16/2006 3:28 AM
Microsoft Corporation
c:\program files\microsoft sql server\mssql.1\mssql\binn\msftepxy.dll

termsrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 680.00 KB (696,320 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\termsrv.dll

icaapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 33.50 KB (34,304 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\icaapi.dll

mstlsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 340.50 KB (348,672 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\mstlsapi.dll

rdpwsx 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 325.13 KB (332,936 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\rdpwsx.dll

rdpclip 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 211.00 KB (216,064 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\rdpclip.exe

wsock32 5.2.3790.0 (srv03_rtm.030324-2048) 23.00 KB (23,552 bytes)
4/8/2004 1:49 PM
Microsoft Corporation
c:\windows\system32\wsock32.dll

urlmon 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 1.53 MB (1,600,000 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\urlmon.dll

explorer 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 1.64 MB (1,720,320 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\explorer.exe

browseui 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 2.42 MB (2,542,592 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\browseui.dll

shdocvw 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 3.49 MB (3,658,240 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\shdocvw.dll

cryptui 5.131.3790.1830 (srv03_sp1_rtm.050324-1447) 1.11 MB (1,159,168 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\cryptui.dll

apphelp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 301.50 KB (308,736 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\apphelp.dll

themeui 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 891.00 KB (912,384 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\themeui.dll

msimg32 5.2.3790.0 (srv03_rtm.030324-2048) 7.00 KB (7,168 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\msimg32.dll

linkinfo 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 46.50 KB (47,616 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\linkinfo.dll

ntshrui 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 244.00 KB (249,856 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\ntshrui.dll

msi 3.1.4000.1830 5.71 MB (5,984,768 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msi.dll

webcheck 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 699.00 KB (715,776 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\webcheck.dll

stobject 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 175.00 KB (179,200 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\stobject.dll

batmeter 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 61.00 KB (62,464 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\batmeter.dll

powrprof 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 44.00 KB (45,056 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\powrprof.dll

fxsst 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 603.00 KB (617,472 bytes) 7/14/2005 5:03 PM
Microsoft Corporation
c:\windows\system32\fxsst.dll

fxsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 710.50 KB (727,552 bytes) 7/14/2005 5:03 PM
Microsoft Corporation
c:\windows\system32\fxsapi.dll

fxsres 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 719.00 KB (736,256 bytes) 7/14/2005 5:03 PM
Microsoft Corporation
c:\windows\system32\fxsres.dll

browselc 6.00.3790.0 (srv03_rtm.030324-2048) 61.50 KB (62,976 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\browselc.dll

shdoclc 6.00.3790.0 (srv03_rtm.030324-2048) 588.00 KB (602,112 bytes)
4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\shdoclc.dll

mstask 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 625.50 KB (640,512 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\mstask.dll

dfshim 2.0.50727.42 (RTM.050727-4200) 164.00 KB (167,936 bytes) 9/23/2005 12:59 AM Microsoft Corporation c:\windows\system32\dfshim.dll

mscoree 2.0.50727.42 (RTM.050727-4200) 864.50 KB (885,248 bytes) 9/23/2005 12:40 AM Microsoft Corporation c:\windows\system32\mscoree.dll

msxml3 8.70.1104.0 3.33 MB (3,488,768 bytes) 7/14/2005 4:58 PM Microsoft Corporation c:\windows\system32\msxml3.dll

mlang 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 813.50 KB (833,024 bytes) 7/14/2005 4:59 PM Microsoft Corporation c:\windows\system32\mlang.dll

shfusion 2.0.50727.42 (RTM.050727-4200) 251.00 KB (257,024 bytes) 9/23/2005 12:40 AM Microsoft Corporation c:\windows\microsoft.net\framework64\v2.0.50727\shfusion.dll

msvcr80 8.00.50727.42 1.42 MB (1,484,800 bytes) 9/23/2005 12:28 AM Microsoft Corporation c:\windows\winsxs\ia64_microsoft.vc80.crt_1fc8b3b9a1e18e3b_8.0.50727.42_x-ww_3d3b516d\msvcr80.dll

fusion 2.0.50727.42 (RTM.050727-4200) 18.50 KB (18,944 bytes) 9/23/2005 12:40 AM Microsoft Corporation c:\windows\microsoft.net\framework64\v2.0.50727\fusion.dll

culture 2.0.50727.42 (RTM.050727-4200) 37.00 KB (37,888 bytes) 9/23/2005 12:46 AM Microsoft Corporation c:\windows\microsoft.net\framework64\v2.0.50727\culture.dll

shfusres 2.0.50727.42 (RTM.050727-4200) 89.00 KB (91,136 bytes) 9/23/2005 12:40 AM Microsoft Corporation c:\windows\microsoft.net\framework64\v2.0.50727\shfusres.dll

cmd 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 507.50 KB (519,680 bytes) 4/8/2004 1:48 PM Microsoft Corporation c:\windows\system32\cmd.exe

sqlservr 2005.090.2028.00 69.19 MB (72,549,080 bytes) 1/26/2006 11:38 AM Microsoft Corporation c:\program files\microsoft sql server\mssql.1\mssql\binn\sqlservr.exe

msvcp80 8.00.50727.42 1.32 MB (1,385,472 bytes) 9/23/2005 12:31 AM Microsoft Corporation c:\windows\winsxs\ia64_microsoft.vc80.crt_1fc8b3b9a1e18e3b_8.0.50727.42_x-ww_3d3b516d\msvcp80.dll

opends60 2005.090.1399.00 38.21 KB (39,128 bytes) 10/14/2005 2:39 PM Microsoft Corporation c:\program files\microsoft sql server\mssql.1\mssql\binn\opends60.dll

instapi 2005.090.1399.00 98.21 KB (100,568 bytes) 10/14/2005 2:30 PM Microsoft Corporation c:\program files\microsoft sql server\90\shared\instapi.dll

sqlvdr70 2005.090.2028.00 1.57 MB (1,650,904 bytes) 1/26/2006 11:35 AM Microsoft Corporation c:\program files\microsoft sql server\mssql.1\mssql\binn\resources\1033\sqlevn70.rll

sqlos 2005.090.1399.00 21.71 KB (22,232 bytes) 10/14/2005 2:45 PM Microsoft Corporation c:\program files\microsoft sql server\mssql.1\mssql\binn\sqlos.dll

xolehlp 2001.12.4720.1830 (srv03_sp1_rtm.050324-1447) 18.00 KB (18,432 bytes) 7/14/2005 4:58 PM Microsoft Corporation c:\windows\system32\xolehlp.dll

msdtcprx 2001.12.4720.1830 (srv03_sp1_rtm.050324-1447) 1.27 MB (1,329,152 bytes) 7/14/2005 4:59 PM Microsoft Corporation c:\windows\system32\msdtcprx.dll

mtxclu 2001.12.4720.1830 (srv03_sp1_rtm.050324-1447) 203.00 KB (207,872 bytes) 7/14/2005 4:58 PM Microsoft Corporation c:\windows\system32\mtxclu.dll

resutils 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 154.00 KB (157,696 bytes) 7/14/2005 4:58 PM Microsoft Corporation c:\windows\system32\resutils.dll

winrnr 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 47.50 KB (48,640 bytes) 7/14/2005 4:58 PM Microsoft Corporation c:\windows\system32\winrnr.dll

security 5.2.3790.0 (srv03_rtm.030324-2048) 7.00 KB (7,168 bytes) 4/8/2004 1:48 PM Microsoft Corporation c:\windows\system32\security.dll

dbghelp 6.6.0003.0 (vbl_core_fbrel(DrewB).051022-1815) 3.43 MB (3,592,408 bytes) 1/26/2006 11:35 AM Microsoft Corporation c:\program files\microsoft sql server\90\shared\dbghelp.dll

sqlncli 2005.090.2028.00 5.15 MB (5,397,264 bytes) 1/26/2006 11:37 AM Microsoft Corporation c:\windows\system32\sqlncli.dll

sqlnclir 2005.090.1399.00 200.21 KB (205,016 bytes) 10/14/2005 2:39 PM Microsoft Corporation c:\windows\system32\sqlnclir.rll

osql 2005.090.2028.00 120.21 KB (123,096 bytes) 1/26/2006 11:34 AM Microsoft Corporation c:\program files\microsoft sql server\90\tools\binn\osql.exe

odbc32 3.526.1830.0 (srv03_sp1_rtm.050324-1447) 704.00 KB (720,896 bytes) 7/14/2005 4:58 PM Microsoft Corporation c:\windows\system32\odbc32.dll

odbcint 3.526.1830.0 (srv03_sp1_rtm.050324-1447) 88.00 KB (90,112 bytes) 7/14/2005 4:58 PM Microsoft Corporation c:\windows\system32\odbcint.dll

osql 2005.090.1399.00 14.21 KB (14,552 bytes) 10/14/2005 2:37 PM Microsoft Corporation c:\program files\microsoft sql server\90\tools\binn\resources\1033\osql.rll

mmc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.51 MB (2,631,168 bytes) 7/14/2005 4:59 PM Microsoft Corporation c:\windows\system32\mmc.exe

mfc42u 6.50.4245.0 3.35 MB (3,510,272 bytes) 7/14/2005 4:59 PM Microsoft Corporation c:\windows\system32\mfc42u.dll

oleacc 4.2.5406.0 (srv03_rtm.030324-2048) 485.00 KB (496,640 bytes) 4/8/2004 1:48 PM Microsoft Corporation c:\windows\system32\oleacc.dll

mmcbase 5.2.3790.0 (srv03_rtm.030324-2048) 139.00 KB (142,336 bytes) 4/8/2004 1:48 PM Microsoft Corporation c:\windows\system32\mmcbase.dll

mmcndmgr 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 3.18 MB (3,331,584 bytes) 7/14/2005 4:59 PM Microsoft Corporation c:\windows\system32\mmcndmgr.dll

cmprops 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 492.00 KB (503,808 bytes) 7/14/2005 5:00 PM Microsoft Corporation c:\windows\system32\cmprops.dll

mmfutil 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 28.00 KB (28,672 bytes) 7/14/2005 4:59 PM Microsoft Corporation c:\windows\system32\mmfutil.dll

ntmsmgr 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.21 MB (1,268,224 bytes) 7/14/2005 4:58 PM Microsoft Corporation c:\windows\system32\ntmsmgr.dll

ntmsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 128.00 KB (131,072 bytes) 7/14/2005 4:58 PM Microsoft Corporation c:\windows\system32\ntmsapi.dll

els 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 520.50 KB (532,992 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\els.dll

dfrgsnap 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 107.00 KB (109,568 bytes) 7/14/2005 4:59 PM
Microsoft Corp. and Executive Software International, Inc.
c:\windows\system32\dfrgsnap.dll

dfrgres 5.2.3790.0 (srv03_rtm.030324-2048) 50.00 KB (51,200 bytes) 4/8/2004 1:48 PM
Microsoft Corp. and Executive Software International, Inc.
c:\windows\system32\dfrgres.dll

mycomput 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 267.50 KB (273,920 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\mycomput.dll

filemgmt 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 928.00 KB (950,272 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\filemgmt.dll

cfgmgr32 5.2.3790.0 (srv03_rtm.030324-2048) 16.00 KB (16,384 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\cfgmgr32.dll

wbemcntl 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 549.50 KB (562,688 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\wbemcntl.dll

localsec 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 644.50 KB (659,968 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\localsec.dll

smlogcfg 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.01 MB (1,056,256 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\smlogcfg.dll

pdh 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 807.00 KB (826,368 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\pdh.dll

odbcbcp 2000.086.1830.00 (srv03_sp1_rtm.050324-1447) 52.00 KB (53,248 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\odbcbcp.dll

snmpsnap 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 565.00 KB (578,560 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\snmpsnap.dll

dmdskmgr 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 542.00 KB (555,008 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\dmdskmgr.dll

dmutil 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 73.00 KB (74,752 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\dmutil.dll

dmdskres 5.2.3790.0 (srv03_rtm.030324-2048) 115.00 KB (117,760 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\dmdskres.dll

devmgr 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 628.00 KB (643,072 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\devmgr.dll

rasuser 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 513.50 KB (525,824 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\rasuser.dll

dsprop 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 361.50 KB (370,176 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\dsprop.dll

dsuiext 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 241.00 KB (246,784 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\dsuiext.dll

mprsnap 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.84 MB (2,979,328 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\mprsnap.dll

rtrfiltr 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 240.00 KB (245,760 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\rtrfiltr.dll

servdeps 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 151.50 KB (155,136 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\servdeps.dll

riched32 5.2.3790.0 (srv03_rtm.030324-2048) 5.00 KB (5,120 bytes) 4/8/2004 1:48 PM
Microsoft Corporation
c:\windows\system32\riched32.dll

riched20 5.31.23.1224 1.38 MB (1,451,008 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\riched20.dll

adsnt 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 753.50 KB (771,584 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\adsnt.dll

SqlManager 2005.090.2028.00 1.44 MB (1,504,984 bytes) 1/26/2006 11:37 AM
Microsoft Corporation
c:\program files\microsoft sql server\90\tools\binn\sqlmanager.dll

atl80 8.00.50727.42 269.50 KB (275,968 bytes) 9/23/2005 12:32 AM
Microsoft Corporation
c:\windows\winsxs\ia64_microsoft.vc80.atl_1fc8b3b9a1e18e3b_8.0.50727.42_x-ww_9ddb3ee1\atl80.dll

mfc80u 8.00.50727.42 3.30 MB (3,465,216 bytes) 9/23/2005 1:08 AM
Microsoft Corporation
c:\windows\winsxs\ia64_microsoft.vc80.mfc_1fc8b3b9a1e18e3b_8.0.50727.42_x-ww_0e21c472\mfc80u.dll

mfc80enu 8.00.50727.42 56.00 KB (57,344 bytes) 9/23/2005 1:09 AM
Microsoft Corporation
c:\windows\winsxs\ia64_microsoft.vc80.mfcloc_1fc8b3b9a1e18e3b_8.0.50727.42_x-ww_6370dd70\mfc80enu.dll

SqlManager 2005.090.2028.00 141.21 KB (144,600 bytes) 1/26/2006 11:34 AM
Microsoft Corporation
c:\program files\microsoft sql server\90\tools\binn\resources\1033\sqlmanager.rll

msxml6 6.00.3883.0 4.15 MB (4,352,712 bytes) 9/8/2005 3:25 AM
Microsoft Corporation
c:\windows\system32\msxml6.dll

tapisnap 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 953.50 KB (976,384 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\tapisnap.dll

ciadmin 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 401.00 KB (410,624 bytes) 7/14/2005 5:00 PM
Microsoft Corporation
c:\windows\system32\ciadmin.dll

query 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 4.93 MB (5,165,568 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\windows\system32\query.dll

mshtml 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 8.85 MB (9,282,048 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\mshtml.dll

msls31 3.10.349.0 502.50 KB (514,560 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msls31.dll

msimtf 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 586.50 KB (600,576 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msimtf.dll

msctf 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 983.50 KB (1,007,104 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\msctf.dll

jscript 5.6.0.8827 1.24 MB (1,304,576 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\jscript.dll

imm32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 322.50 KB (330,240 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\imm32.dll

mshtmled 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 1.46 MB (1,531,392 bytes) 7/14/2005 4:59 PM
Microsoft Corporation
c:\windows\system32\mshtmled.dll

wbemprox 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 65.00 KB (66,560 bytes) 7/14/2005 5:01 PM
Microsoft Corporation
c:\windows\system32\wbem\wbemprox.dll

msinfo32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 72.00 KB (73,728 bytes) 7/14/2005 4:58 PM
Microsoft Corporation
c:\program files\common files\microsoft shared\msinfo\msinfo32.exe

msinfo 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.26 MB (1,321,472 bytes) 7/14/2005 5:02 PM
Microsoft Corporation
c:\windows\pchealth\helpctr\binaries\msinfo.dll

[Services]

Display Name Name State
Start Mode Service Type Path
Error Control Start Name Tag ID

Application Experience Lookup Service
AeLookupSvc Stopped Disabled
Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Alerter Alerter Stopped Disabled
Share Process
c:\windows\system32\svchost.exe -k localservice Normal NT AUTHORITY\LocalService 0

Application Layer Gateway Service ALG
Stopped Manual Own Process
c:\windows\system32\alg.exe
Normal NT AUTHORITY\LocalService 0

Application Management AppMgmt Stopped
Manual Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

ASP.NET State Service aspnet_state Stopped
Manual Own Process
c:\windows\microsoft.net\framework64\v2.0.50727\aspnet_state.exe Normal
NT AUTHORITY\NetworkService
0

Windows Audio AudioSrv Stopped
Disabled Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Background Intelligent Transfer Service BITS
Stopped Manual Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Computer Browser Browser Running
Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Indexing Service CiSvc Stopped
Disabled Share Process
c:\windows\system32\cisvc.exe
Normal LocalSystem 0

ClipBook ClipSrv Stopped Disabled
Own Process
c:\windows\system32\clipsrv.exe
Normal LocalSystem 0

.NET Runtime Optimization Service v2.0.50727_X86
clr_optimization_v2.0.50727_32
Stopped Manual Own Process
c:\windows\microsoft.net\framework\v2.0.50727\mscorsvw.exe Ignore
LocalSystem 0

.NET Runtime Optimization Service v2.0.50727_I64
clr_optimization_v2.0.50727_64
Stopped Manual Own Process
c:\windows\microsoft.net\framework64\v2.0.50727\mscorsvw.exe Ignore
LocalSystem 0

COM+ System Application COMSysApp Stopped
Manual Own Process
c:\windows\system32\dllhost.exe /processid:{02d4b3f1-fd88-11d1-960d-00805fc79235} Normal
LocalSystem 0

Cryptographic Services CryptSvc Running
Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

DCOM Server Process Launcher
DcomLaunch Running Auto
Share Process
c:\windows\system32\svchost.exe -k dcomlaunch Normal
LocalSystem 0

Distributed File System Dfs Stopped
Manual Own Process
c:\windows\system32\dfssvc.exe
Normal LocalSystem 0

DHCP Client Dhcp Running Auto
Share Process
c:\windows\system32\svchost.exe -k networkservice Normal NT AUTHORITY\NetworkService 0

Logical Disk Manager Administrative Service
dmadmin Stopped Manual
Share Process
c:\windows\system32\dmadmin.exe /com Normal LocalSystem 0

Logical Disk Manager dmserver Running
Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

DNS Client Dnscache Running Auto
Share Process
c:\windows\system32\svchost.exe -k networkservice Normal NT AUTHORITY\NetworkService 0

Emulex HBAnyware Discovery Emulex HBAnyware Discovery Stopped Manual
Own Process "c:\program files (x86)\hbanyware\hbadiscsrvr.exe" Normal
LocalSystem 0

Emulex HBAnyware SvcMgr Emulex HBAnyware SvcMgr Stopped Disabled
Own Process "c:\program files (x86)\hbanyware\hbahsmgr.exe" Normal
LocalSystem 0

Emulex HBAnyware Emulex HBAnyware Stopped Disabled Own Process "c:\program files (x86)\hbanyware\rmserver.exe" Normal
LocalSystem 0

Error Reporting Service ERSvc Stopped
Disabled Share Process
c:\windows\system32\svchost.exe -k winerr Ignore LocalSystem 0

Event Log Eventlog Running Auto
Share Process
c:\windows\system32\services.exe
Normal LocalSystem 0

COM+ Event System EventSystem Running
Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Help and Support helpsvc Running
Manual Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

HID Input Service HidServ Running
Auto Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

HTTP SSL HTTPFilter Stopped Manual
Share Process
c:\windows\system32\lsass.exe
Normal LocalSystem 0

IAS Jet Database Access IASJet Stopped
Manual Share Process
c:\windows\syswow64\svchost.exe -k iasjet Normal LocalSystem 0

```
IMAPI CD-Burning COM Service
        ImapiService Stopped    Disabled
        Own Process
        c:\windows\system32\imapi.exe
        Normal  LocalSystem 0

Intersite Messaging     IsmServ Stopped
        Disabled        Own Process
        c:\windows\system32\ismserv.exe
        Normal  LocalSystem 0

Kerberos Key Distribution Center        kdc
        Stopped Disabled        Share
Process c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

Server  lanmanserver    Running Auto
        Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Workstation     lanmanworkstation       Running
        Auto    Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

License Logging         LicenseService
        Stopped Disabled        Own
Process c:\windows\system32\llssrv.exe
        Normal  NT
AUTHORITY\NetworkService        0

TCP/IP NetBIOS Helper   LmHosts Running
        Auto    Share Process
        c:\windows\system32\svchost.exe -
k localservice  Normal  NT
AUTHORITY\LocalService  0
Messenger       Messenger       Stopped Disabled
        Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Distributed Transaction Coordinator     MSDTC
        Running Auto    Own
Process c:\windows\system32\msdtc.exe
        Normal  NT
AUTHORITY\NetworkService        0

SQL Server FullText Search (MSSQLSERVER)
        msftesql        Running Auto
        Own Process "c:\program
files\microsoft sql
server\mssql.1\mssql\binn\msftesql.exe" -
s:mssql.1 -f:mssqlserver        Normal
        LocalSystem 0
Windows Installer       MSIServer       Stopped
        Manual  Share Process
        c:\windows\system32\msiexec.exe
/v      Normal  LocalSystem 0

SQL Server (MSSQLSERVER)
        MSSQLSERVER     Stopped
        Manual  Own Process
        "c:\program files\microsoft sql
server\mssql.1\mssql\binn\sqlservr.exe" -
smssqlserver Normal     LocalSystem 0

SQL Server Active Directory Helper
        MSSQLServerADHelper     Stopped
        Disabled        Own Process
        "c:\program files\microsoft sql
server\90\shared\sqladhlp90.exe"        Normal
        NT AUTHORITY\NetworkService
        0

Network DDE     NetDDE  Stopped Disabled
        Share Process
        c:\windows\system32\netdde.exe
        Normal  LocalSystem 0
Network DDE DSDM        NetDDEdsdm Stopped
        Disabled        Share Process
        c:\windows\system32\netdde.exe
        Normal  LocalSystem 0

Net Logon       Netlogon        Stopped Manual
        Share Process
        c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

Network Connections     Netman  Running
        Manual  Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Network Location Awareness (NLA)        Nla
        Running Manual  Share
Process c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

File Replication        NtFrs   Stopped
        Manual  Own Process
        c:\windows\system32\ntfrs.exe
        Ignore  LocalSystem 0

NT LM Security Support Provider         NtLmSsp
        Stopped Manual  Share
Process c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

Removable Storage       NtmsSvc Stopped
        Manual  Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Office Source Engine    ose     Stopped
        Manual  Own Process
        "c:\program files (x86)\common
files\microsoft shared\source engine\ose.exe"
        Normal  LocalSystem 0

Plug and Play   PlugPlay        Running Auto
        Share Process
        c:\windows\system32\services.exe
        Normal  LocalSystem 0

IPSEC Services          PolicyAgent     Running
        Auto    Share Process
        c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

ONC/RPC Portmapper      portmap Stopped
        Disabled        Own Process
        c:\program files (x86)\qlogic
corporation\sansurfer\portmap.exe       Normal
        LocalSystem 0

Protected Storage       ProtectedStorage
        Running Auto    Share
Process c:\windows\system32\lsass.exe
        Normal  LocalSystem 0


Remote Access Auto Connection Manager
        RasAuto Stopped Manual
        Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Remote Access Connection Manager        RasMan
        Stopped Manual  Share
Process c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0
Remote Desktop Help Session Manager
        RDSessMgr       Stopped Manual
        Own Process
        c:\windows\system32\sessmgr.exe
        Normal  LocalSystem 0

Routing and Remote Access
        RemoteAccess    Stopped
        Disabled        Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Remote Registry         RemoteRegistry
        Stopped Disabled        Share
Process c:\windows\system32\svchost.exe -
k regsvc        Normal  NT
AUTHORITY\LocalService  0
Remote Procedure Call (RPC) Locator
        RpcLocator      Stopped Manual
        Own Process
        c:\windows\system32\locator.exe
        Normal  NT
AUTHORITY\NetworkService        0

Remote Procedure Call (RPC)     RpcSs
        Running Auto    Share
Process c:\windows\system32\svchost.exe -
k rpcss         Normal  NT
Authority\NetworkService        0
Resultant Set of Policy Provider
        RSoPProv        Stopped Manual
        Share Process
        c:\windows\system32\rsopprov.exe
        Normal  LocalSystem 0

Special Administration Console Helper   sacsvr
        Running Manual  Share
Process c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Security Accounts Manager       SamSs   Running
        Auto    Share Process
        c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

Smart Card      SCardSvr        Stopped Manual
        Share Process
        c:\windows\system32\scardsvr.exe
        Ignore  NT
AUTHORITY\LocalService  0
Task Scheduler          Schedule        Running
        Auto    Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Secondary Logon         seclogon        Stopped
        Disabled        Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Ignore  LocalSystem 0


System Event Notification       SENS    Running
        Auto    Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0
```

Windows Firewall/Internet Connection Sharing (ICS) SharedAccess Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Shell Hardware Detection ShellHWDetection Running Auto Share Process c:\windows\system32\svchost.exe -k netsvcs Ignore LocalSystem 0

SNMP Service SNMP Stopped Disabled Own Process c:\windows\system32\snmp.exe Normal LocalSystem 0

SNMP Trap Service SNMPTRAP Stopped Manual Own Process c:\windows\system32\snmptrap.exe Normal NT AUTHORITY\LocalService 0

Print Spooler Spooler Stopped Disabled Own Process c:\windows\system32\spoolsv.exe Normal LocalSystem 0

SQL Server Browser SQLBrowser Stopped Disabled Own Process "c:\program files\microsoft sql server\90\shared\sqlbrowser.exe" Normal LocalSystem 0

SQL Server Agent (MSSQLSERVER) SQLSERVERAGENT Stopped Manual Own Process "c:\program files\microsoft sql server\mssql.1\mssql\binn\sqlagent90.exe" -i mssqlserver Normal LocalSystem 0

SQL Server VSS Writer SQLWriter Stopped Manual Own Process "c:\program files\microsoft sql server\90\shared\sqlwriter.exe" Normal LocalSystem 0

Windows Image Acquisition (WIA) stisvc Stopped Disabled Share Process c:\windows\system32\svchost.exe -k imgsvc Normal NT AUTHORITY\LocalService 0

Microsoft Software Shadow Copy Provider swprv Stopped Manual Own Process c:\windows\system32\svchost.exe -k swprv Normal LocalSystem 0

Performance Logs and Alerts SysmonLog Stopped Manual Own Process c:\windows\system32\smlogsvc.exe Normal NT Authority\NetworkService 0

Telephony TapiSrv Stopped Manual Share Process c:\windows\system32\svchost.exe -k tapisrv Normal LocalSystem 0

Terminal Services TermService Running Manual Share Process c:\windows\system32\svchost.exe -k termsvcs Normal LocalSystem 0

Telnet TlntSvr Stopped Disabled Own Process c:\windows\system32\tlntsvr.exe Normal NT AUTHORITY\LocalService 0

Distributed Link Tracking Server TrkSvr Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Distributed Link Tracking Client TrkWks Running Auto Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Terminal Services Session Directory Tssdis Stopped Disabled Own Process c:\windows\system32\tssdis.exe Normal LocalSystem 0

Upload Manager uploadmgr Stopped Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Uninterruptible Power Supply UPS Stopped Manual Own Process c:\windows\system32\ups.exe Normal NT AUTHORITY\LocalService 0

Virtual Disk Service vds Stopped Manual Own Process c:\windows\system32\vds.exe Normal LocalSystem 0

Volume Shadow Copy VSS Stopped Manual Own Process c:\windows\system32\vssvc.exe Normal LocalSystem 0

Windows Time W32Time Running Auto Share Process c:\windows\system32\svchost.exe -k localservice Normal NT AUTHORITY\LocalService 0

WebClient WebClient Stopped Disabled Share Process c:\windows\system32\svchost.exe -k localservice Normal NT AUTHORITY\LocalService 0

WinHTTP Web Proxy Auto-Discovery Service WinHttpAutoProxySvc Stopped Manual Share Process c:\windows\system32\svchost.exe -k localservice Normal NT AUTHORITY\LocalService 0

Windows Management Instrumentation winmgmt Running Auto Share Process c:\windows\system32\svchost.exe -k netsvcs Ignore LocalSystem 0

Windows Management Instrumentation Driver Extensions Wmi Stopped Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

WMI Performance Adapter WmiApSrv Stopped Manual Own Process c:\windows\system32\wbem\wmiapsrv.exe Normal LocalSystem 0

Automatic Updates wuauserv Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Wireless Configuration WZCSVC Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Network Provisioning Service xmlprov Stopped Manual Share Process c:\windows\system32\svchost.exe -k netsvcs 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

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\System Tools All Users:Accessories\System Tools All Users

Administrative Tools All Users:Administrative Tools All Users

Debugging Tools for Windows 64-bit All Users:Debugging Tools for Windows 64-bit All Users

Emulex All Users:Emulex All Users

HP SAN Utilities All Users:HP SAN Utilities All Users

HP System Tools All Users:HP System Tools All Users

HP System Tools\HP Array Configuration Utility All Users:HP System Tools\HP Array Configuration Utility All Users

Microsoft SQL Server 2005 All Users:Microsoft SQL Server 2005 All Users

Microsoft SQL Server 2005\Analysis Services All Users:Microsoft SQL Server 2005\Analysis Services All Users

Microsoft SQL Server 2005\Configuration Tools All Users:Microsoft SQL Server 2005\Configuration Tools All Users

Microsoft SQL Server 2005\Documentation and Tutorials All Users:Microsoft SQL Server 2005\Documentation and Tutorials All Users

Microsoft SQL Server 2005\Documentation and Tutorials\Tutorials All Users:Microsoft SQL Server 2005\Documentation and Tutorials\Tutorials All Users

Microsoft SQL Server 2005\Performance Tools All Users:Microsoft SQL Server 2005\Performance Tools All Users

Startup All Users:Startup All Users

Accessories NT AUTHORITY\SYSTEM:Accessories NT AUTHORITY\SYSTEM
Accessories\Accessibility NT AUTHORITY\SYSTEM:Accessories\Accessibility NT AUTHORITY\SYSTEM
Accessories\Entertainment NT AUTHORITY\SYSTEM:Accessories\Entertainment NT AUTHORITY\SYSTEM
Startup NT AUTHORITY\SYSTEM:Startup NT AUTHORITY\SYSTEM
Accessories SQLDIABLO\Administrator:Accessories SQLDIABLO\Administrator
Accessories\Accessibility SQLDIABLO\Administrator:Accessories\Accessibility SQLDIABLO\Administrator
Accessories\Entertainment SQLDIABLO\Administrator:Accessories\Entertainment SQLDIABLO\Administrator
Administrative Tools SQLDIABLO\Administrator:Administrative Tools SQLDIABLO\Administrator
HP SAN Utilities SQLDIABLO\Administrator:HP SAN Utilities SQLDIABLO\Administrator
QLogic Corporation SQLDIABLO\Administrator:QLogic Corporation SQLDIABLO\Administrator
QLogic Corporation\SANblade Control VIX SQLDIABLO\Administrator:QLogic Corporation\SANblade Control VIX SQLDIABLO\Administrator
QLogic Management Suite SQLDIABLO\Administrator:QLogic Management Suite SQLDIABLO\Administrator
Startup SQLDIABLO\Administrator:Startup SQLDIABLO\Administrator

[Startup Programs]

Program	Command	User Name	Location
desktop	desktop.ini	NT AUTHORITY\SYSTEM	Startup
desktop	desktop.ini	SQLDIABLO\Administrator	Startup
desktop	desktop.ini	.DEFAULT	Startup
desktop	desktop.ini	All Users	Common Startup

[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
WordPad Document	"%programfiles%\windows nt\accessories\wordpad.exe"
Bitmap Image	mspaint.exe

[Windows Error Reporting]

Time	Type	Details

[Internet Settings]

[Internet Explorer]

[Following are sub-categories of this main category]
[Summary]

Item	Value
Version	6.0.3790.1830
Build	63790.1830
Application Path	C:\Program Files\Internet Explorer
Language	English (United States)
Active Printer	Not Available
Cipher Strength	128-bit
Content Advisor	Disabled
IEAK Install	No

[File Versions]

File	Version	Size	Date	Path	Company
actxprxy.dll	6.0.3790.1830	237 KB	3/24/2005 5:56:36 PM	C:\WINDOWS\system32	Microsoft Corporation
advpack.dll	6.0.3790.1830	260 KB	3/24/2005 5:56:40 PM	C:\WINDOWS\system32	Microsoft Corporation
asctrls.ocx	6.0.3790.0	219 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
browselc.dll	6.0.3790.0	62 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
browseui.dll	6.0.3790.1830	2,483 KB	3/24/2005 5:56:45 PM	C:\WINDOWS\system32	Microsoft Corporation
cdfview.dll	6.0.3790.1830	307 KB	3/24/2005 5:56:48 PM	C:\WINDOWS\system32	Microsoft Corporation
comctl32.dll	5.82.3790.1830	1,764 KB	3/24/2005 5:56:54 PM	C:\WINDOWS\system32	Microsoft Corporation
dxtrans.dll	6.3.3790.1830	618 KB	3/24/2005 5:57:12 PM	C:\WINDOWS\system32	Microsoft Corporation
dxtmsft.dll	6.3.3790.1830	986 KB	3/24/2005 5:57:12 PM	C:\WINDOWS\system32	Microsoft Corporation
iecont.dll	<File Missing>	Not Available	Not Available	Not Available	
iecontlc.dll	<File Missing>	Not Available	Not Available	Not Available	
iedkcs32.dll	16.0.3790.1830	702 KB	3/24/2005 5:57:25 PM	C:\WINDOWS\system32	Microsoft Corporation
iepeers.dll	6.0.3790.1830	701 KB	3/24/2005 5:57:25 PM	C:\WINDOWS\system32	Microsoft Corporation
iesetup.dll	6.0.3790.1830	98 KB	3/24/2005 5:57:25 PM	C:\WINDOWS\system32	Microsoft Corporation
ieuinit.inf	Not Available	24 KB	3/24/2005 3:31:55 PM	C:\WINDOWS\system32	Not Available
iexplore.exe	6.0.3790.1830	108 KB	3/24/2005 4:29:42 PM	C:\Program Files\Internet Explorer	Microsoft Corporation
imgutil.dll	6.0.3790.1830	114 KB	3/24/2005 5:57:27 PM	C:\WINDOWS\system32	Microsoft Corporation
inetcpl.cpl	6.0.3790.1830	666 KB	3/24/2005 5:57:27 PM	C:\WINDOWS\system32	Microsoft Corporation
inetcplc.dll	6.0.3790.0	108 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
inseng.dll	6.0.3790.1830	276 KB	3/24/2005 5:57:28 PM	C:\WINDOWS\system32	Microsoft Corporation
mlang.dll	6.0.3790.1830	814 KB	3/24/2005 5:57:39 PM	C:\WINDOWS\system32	Microsoft Corporation
msencode.dll	<File Missing>	Not Available	Not Available	Not Available	
mshta.exe	6.0.3790.1830	68 KB	3/24/2005 4:26:48 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtml.dll	6.0.3790.1830	9,065 KB	3/24/2005 5:57:48 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtml.tlb	6.0.3790.1830	1,319 KB	3/24/2005 3:26:52 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtmled.dll	6.0.3790.1830	1,496 KB	3/24/2005 5:57:48 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtmler.dll	6.0.3790.1830	56 KB	3/24/2005 3:26:54 PM	C:\WINDOWS\system32	Microsoft Corporation
msident.dll	6.0.3790.1830	144 KB	3/24/2005 5:57:49 PM	C:\WINDOWS\system32	Microsoft Corporation
msidntld.dll	6.0.3790.0	14 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
msieftp.dll	6.0.3790.1830	579 KB	3/24/2005 5:57:49 PM	C:\WINDOWS\system32	Microsoft Corporation

msrating.dll 6.0.3790.1830 415 KB
3/24/2005 5:57:51 PM
C:\WINDOWS\system32
Microsoft Corporation
mstime.dll 6.0.3790.1830 1,800 KB
3/24/2005 5:57:51 PM
C:\WINDOWS\system32
Microsoft Corporation
occache.dll 6.0.3790.1830 218 KB
3/24/2005 5:57:57 PM
C:\WINDOWS\system32
Microsoft Corporation
proctexe.ocx <File Missing> Not
Available Not Available Not Available Not
Available
sendmail.dll 6.0.3790.1830 109 KB
3/24/2005 5:58:15 PM
C:\WINDOWS\system32
Microsoft Corporation
shdoclc.dll 6.0.3790.0 588 KB
3/25/2003 4:00:00 AM
C:\WINDOWS\system32
Microsoft Corporation
shdocvw.dll 6.0.3790.1830 3,573 KB
3/24/2005 5:58:16 PM
C:\WINDOWS\system32
Microsoft Corporation
shfolder.dll 6.0.3790.1830 43 KB
3/24/2005 5:58:20 PM
C:\WINDOWS\system32
Microsoft Corporation
shlwapi.dll 6.0.3790.1830 804 KB
3/24/2005 5:58:21 PM
C:\WINDOWS\system32
Microsoft Corporation
tdc.ocx 1.3.0.3130 177 KB
3/25/2003 4:00:00 AM
C:\WINDOWS\system32
Microsoft Corporation
url.dll 6.0.3790.1830 49 KB
3/24/2005 5:58:33 PM
C:\WINDOWS\system32
Microsoft Corporation
urlmon.dll 6.0.3790.1830 1,563 KB
3/24/2005 5:58:33 PM
C:\WINDOWS\system32
Microsoft Corporation
webcheck.dll 6.0.3790.1830 699 KB
3/24/2005 5:58:37 PM
C:\WINDOWS\system32
Microsoft Corporation
wininet.dll 6.0.3790.1830 1,658 KB
3/24/2005 5:58:38 PM
C:\WINDOWS\system32
Microsoft Corporation

[Connectivity]

Item Value
Connection Preference Never dial

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 Not Available
Available Disk Space Not Available
Maximum Cache Size Not Available
Available Cache Size Not Available

[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
No personal certificate information available

[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
My Computer Custom
Local intranet Custom
Trusted sites Custom
Internet Custom
Restricted sites Custom

Microsoft SQL Server 2005 Startup Parameters

sqlservr.exe" -c -x -T652 –T661 -T834 -T3502 -T8011 -T8012 -T8018 –T8019 -T8020
where
rem ** -c - Run as console app
rem ** -x - Disable stats
rem ** -T652 - Disable readahead
rem ** -T661 - Disable the ghost record removal process
rem ** -T3502 - Send checkpoint state changes to errorlog
rem ** -T834 - Large pages
rem ** -T8011 - Disable ring buffer for resource monitor
rem ** -T8012 - Disable ring buffer for schedulers
rem ** -T8018 - Disable exception ring buffer

Note: DBCC TRACEON(652,-1) was executed after steady state was achieved. Readahead speeds up rampup, but helps performance after rampup.

Microsoft SQL Server TCP and Soft Numa Config

Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Microsoft SQL Server\90\NodeConfiguration]

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Microsoft SQL Server\90\NodeConfiguration\Node0]
"CPUMask"=dword:00000003

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Microsoft SQL Server\90\NodeConfiguration\Node1]
"CPUMask"=dword:0000000C

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Microsoft SQL Server\90\NodeConfiguration\Node2]
"CPUMask"=dword:00000030

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Microsoft SQL Server\90\NodeConfiguration\Node3]
"CPUMask"=dword:000000C0

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Microsoft SQL Server\90\NodeConfiguration\Node4]
"CPUMask"=dword:00000300

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Microsoft SQL Server\90\NodeConfiguration\Node5]
"CPUMask"=dword:00000c00

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Microsoft SQL Server\90\NodeConfiguration\Node6]
"CPUMask"=dword:00003000

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Microsoft SQL Server\90\NodeConfiguration\Node7]
"CPUMask"=dword:0000c000

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Microsoft SQL Server\MSSQL.1\MSSQLServer\SuperSocketNetLib\Tcp\IPAll]

```
"TcpPort"="1436[0x1],1437[0x2],1438[0x4],143
9[0x8],1440[0x10],1441[0x20],1442[0x40],1443[
0x80]"
"TcpDynamicPorts"=""
"DisplayName"="Any IP Address"
```

U12ser Rights Assignment

The Group Policy Editor of Windows.net was used to modify an entry under User Rights Assignment. Specifically, the right to "Lock pages in memory" was given to the Administrators group so that SQL Server 2000 could use large amounts of physical memory.

LP1050 Driver Settings

```
Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor]
"Type"=dword:00000001
"Start"=dword:00000000
"ErrorControl"=dword:00000001
"Tag"=dword:00000044
"ImagePath"=hex(2):73,00,79,00,73,00,74,00,65
,00,6d,00,33,00,32,00,5c,00,44,00,\

52,00,49,00,56,00,45,00,52,00,53,00,5c,00,65,00
,6c,00,78,00,73,00,74,00,6f,\
  00,72,00,2e,00,73,00,79,00,73,00,00,00
"Group"="SCSI Miniport"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Parameters]
"BusType"=dword:00000006

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Parameters\Device]
"DriverParameter"="QueueDepth=40;NodeTime
Out=10;LinkTimeOut=40;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Parameters\Device0]
"DriverParameter"="CoalesceRspCnt=0;EmulexO
ption=0x0;QueueDepth=40;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Parameters\Device1]
"DriverParameter"="CoalesceRspCnt=0;EmulexO
ption=0x0;QueueDepth=40;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Parameters\Device2]
"DriverParameter"="CoalesceMsCnt=13;EmulexO
ption=0x0;QueueDepth=40;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Parameters\Device3]
"DriverParameter"="CoalesceMsCnt=10;EmulexO
ption=0x0;QueueDepth=40;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Parameters\Device4]
"DriverParameter"="CoalesceMsCnt=10;EmulexO
ption=0x0;QueueDepth=40;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Parameters\Device5]
"DriverParameter"="CoalesceMsCnt=13;EmulexO
ption=0x0;QueueDepth=40;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Parameters\PNPInterface]
"5"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Security]
"Security"=hex:01,00,14,80,b8,00,00,00,c4,00,00
,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,\

00,00,02,00,88,00,06,00,00,00,00,00,14,00,fd,01
,02,00,01,01,00,00,00,00,00,\

05,12,00,00,00,00,00,18,00,ff,01,0f,00,01,02,00,
00,00,00,00,05,20,00,00,00,\

20,02,00,00,00,00,14,00,8d,01,02,00,01,01,00,0
0,00,00,00,05,04,00,00,00,00,\

00,14,00,8d,01,02,00,01,01,00,00,00,00,00,05,0
6,00,00,00,00,00,14,00,00,01,\

00,00,01,01,00,00,00,00,00,05,0b,00,00,00,00,0
0,18,00,fd,01,02,00,01,02,00,\

00,00,00,00,05,20,00,00,00,23,02,00,00,01,01,0
0,00,00,00,00,05,12,00,00,00,\
  01,01,00,00,00,00,00,05,12,00,00,00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\elxstor\Enum]
"0"="PCI\\VEN_10DF&DEV_F0A5&SUBSYS_F0A5
10DF&REV_01\\4&15291ab&0&08"
"Count"=dword:00000002
"NextInstance"=dword:00000002
"1"="PCI\\VEN_10DF&DEV_F0A5&SUBSYS_F0A5
10DF&REV_01\\4&15291ab&0&09"
```

QLDIRECT Driver Settings

```
Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\qldirect]
"ERRORCONTROL"=dword:00000001
"TYPE"=dword:00000001
"GROUP"="qldirect"
"START"=dword:00000002

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\qldirect\Parameters]
"SRBLISTSIZE"=dword:00000040
"FLAGS"=dword:00000000
"MAXPATHSPERDEVICE"=dword:00000001
"INSPECTIONINTERVAL"=dword:00000258
"OPTIMIZATION"=dword:00000001
"MAXRETRIESPERPATH"=dword:00000003
"MAXRETRIESPERIO"=dword:00000008
"PerCpuData"=dword:00000000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\qldirect\Enum]
"0"="Root\\LEGACY_QLDIRECT\\0000"
"Count"=dword:00000001
"NextInstance"=dword:00000001
```

Intel PRO/1000 MT Dual Port Server Adapter

All default, except Interrupt Moderation = Extreme

C.1 Microsoft SQL Server 8.0 Configuration Parameters

```
name                                minimum
maximum     config_value run_value
 ----------------------------------- ----------- -----------
----------- ----------- -----------
 Ad Hoc Distributed Queries                  0
1           0           0
 affinity I/O mask                  -2147483648
2147483647  0           0
 affinity mask                      -2147483648
2147483647  65535       65535
 affinity64 I/O mask                -2147483648
2147483647  0           0
 affinity64 mask                    -2147483648
2147483647  0           0
 Agent XPs                                   0           1
0           0
 allow updates                               0           1
0           0
 awe enabled                                 0           1
1           1
 blocked process threshold                   0
86400       0           0
 c2 audit mode                               0           1
0           0
 clr enabled                                 0           1
0           0
 cost threshold for parallelism              0
32767       5           5
 cross db ownership chaining                 0
1           0           0
 cursor threshold                           -1
2147483647  -1          -1
 Database Mail XPs                           0           1
0           0
 default full-text language                  0
2147483647  1033        1033
 default language                            0
9999        0           0
 default trace enabled                       0           1
0           0
 disallow results from triggers              0
1           0           0
 fill factor (%)                             0         100
0           0
```

ft crawl bandwidth (max) 0
32767 100 100
ft crawl bandwidth (min) 0
32767 0 0
ft notify bandwidth (max) 0
32767 100 100
ft notify bandwidth (min) 0
32767 0 0
in-doubt xact resolution 0
2 0 0
index create memory (KB) 704
2147483647 0 0
lightweight pooling 0 1
1 1
locks 5000
2147483647 0 0
max degree of parallelism 0
64 1 1
max full-text crawl range 0
256 4 4
max server memory (MB) 16
2147483647 124000 124000
max text repl size (B) 0
2147483647 65536 65536
max worker threads 128
32767 800 800
media retention 0 365
0 0
min memory per query (KB) 512
2147483647 1024 1024
min server memory (MB) 0
2147483647 0 16
nested triggers 0 1
1 1
network packet size (B) 512
32767 4096 4096
Ole Automation Procedures 0
1 0 0
open objects 0
2147483647 0 0
PH timeout (s) 1 3600
60 60
precompute rank 0
1 0 0
priority boost 0 1
0 0
query governor cost limit 0
2147483647 0 0
query wait (s) -1
2147483647 -1 -1
recovery interval (min) 0
32767 32767 32767
remote access 0 1
1 1
remote admin connections 0
1 0 0
remote login timeout (s) 0
2147483647 20 20
remote proc trans 0 1
0 0
remote query timeout (s) 0
2147483647 600 600
Replication XPs 0 1
0 0
scan for startup procs 0 1
0 0
server trigger recursion 0
1 1 1
set working set size 0 1
0 0
show advanced options 0
1 1 1
SMO and DMO XPs 0
1 1 1
SQL Mail XPs 0 1
0 0
transform noise words 0
0 0
two digit year cutoff 1753
9999 2049 2049
user connections 0
32767 0 0
user options 0 32767
0 0
Web Assistant Procedures 0
1 0 0
xp_cmdshell 0 1
0 0

C.2 Client System Configuration Parameters

Client Windows Server 2003 Settings

System Information report written at: 03/06/06 16:14:30
System Name: OLYMASTER
[System Summary]

Item Value
OS Name Microsoft(R) Windows(R) Server 2003, Standard Edition
Version 5.2.3790 Service Pack 1 Build 3790

Other OS Description Not Available
OS Manufacturer Microsoft Corporation

System Name DL25
System Manufacturer HP
System Model ProLiant DL140 G2

System Type X86-based PC
Processor x86 Family 15 Model 4 Stepping 3 GenuineIntel ~3600 Mhz
Processor x86 Family 15 Model 4 Stepping 3 GenuineIntel ~3600 Mhz
Processor x86 Family 15 Model 4 Stepping 3 GenuineIntel ~3600 Mhz
Processor x86 Family 15 Model 4 Stepping 3 GenuineIntel ~3600 Mhz
BIOS Version/Date HP 1.14, 9/13/2005

SMBIOS Version 2.33
Windows Directory C:\WINDOWS

System Directory C:\WINDOWS\system32
Boot Device \Device\HarddiskVolume1
Locale United States
Hardware Abstraction Layer Version = "5.2.3790.1830 (srv03_sp1_rtm.050324-1447)"

User Name Not Available
Time Zone Pacific Standard Time
Total Physical Memory 1,022.93 MB
Available Physical Memory 683.36 MB
Total Virtual Memory 2.91 GB
Available Virtual Memory 2.67 GB
Page File Space 2.00 GB

Page File C:\pagefile.sys
[Hardware Resources]

[Conflicts/Sharing]

Resource Device
I/O Port 0x00000000-0x00000CF7 PCI bus

I/O Port 0x00000000-0x00000CF7 Direct memory access controller

Memory Address 0xDA000000-0xDBFFFFFF Intel(R) 6700PXH PCI Express-to-PCI Bridge A - 0329
Memory Address 0xDA000000-0xDBFFFFFF Ethernet Controller

Memory Address 0xD8100000-0xD81FFFFF Intel(R) E7525/E7520 PCI Express Root Port B0 - 3597
Memory Address 0xD8100000-0xD81FFFFF Broadcom NetXtreme Gigabit Ethernet #3

Memory Address 0xD8200000-0xD82FFFFF Intel(R) E7520 PCI Express Root Port B1 - 3598
Memory Address 0xD8200000-0xD82FFFFF Broadcom NetXtreme Gigabit Ethernet #4

IRQ 16 Intel(R) E7525/E7520/E7320 PCI Express Root Port A0 - 3595
IRQ 16 Intel(R) E7525/E7520 PCI Express Root Port B0 - 3597
IRQ 16 Broadcom NetXtreme Gigabit Ethernet #3
IRQ 16 Intel(R) E7520 PCI Express Root Port B1 - 3598
IRQ 16 Broadcom NetXtreme Gigabit Ethernet #4
IRQ 16 Intel(R) E7520 PCI Express Root Port C0 - 3599
IRQ 16 Intel(R) 82801EB USB Universal Host Controller - 24D2
IRQ 16 RAGE XL PCI Family (Microsoft Corporation)

Memory Address 0xA0000-0xBFFFF PCI bus

Memory Address 0xA0000-0xBFFFF RAGE XL PCI Family (Microsoft Corporation)

Memory Address 0xD8300000-0xDBFFFFFF Intel(R) E7520 PCI Express Root Port C0 - 3599
Memory Address 0xD8300000-0xDBFFFFFF Intel(R) 6700/6702PXH I/OxAPIC Interrupt Controller A - 0326

[DMA]

Resource Device Status
Channel 4 Direct memory access controller OK

[Forced Hardware]

Device PNP Device ID

[I/O]

Resource Device Status
0x00000000-0x00000CF7 PCI bus OK

0x00000000-0x00000CF7 Direct memory access controller OK
0x00000D00-0x0000FFFF PCI bus OK

0x00001400-0x0000141F Intel(R) 82801EB USB Universal Host Controller - 24D2 OK

0x00001420-0x0000143F Intel(R) 82801EB USB Universal Host Controller - 24D4 OK

0x00002000-0x000020FF RAGE XL PCI Family (Microsoft Corporation) OK
0x000003B0-0x000003BB RAGE XL PCI Family (Microsoft Corporation) OK
0x000003C0-0x000003DF RAGE XL PCI Family (Microsoft Corporation) OK
0x00000A79-0x00000A79 ISAPNP Read Data Port OK
0x00000279-0x00000279 ISAPNP Read Data Port OK
0x00000274-0x00000277 ISAPNP Read Data Port OK
0x00000010-0x0000001F Motherboard resources OK
0x00000024-0x00000025 Motherboard resources OK
0x00000028-0x00000029 Motherboard resources OK
0x0000002C-0x0000002D Motherboard resources OK
0x0000002E-0x0000002F Motherboard resources OK
0x00000030-0x00000031 Motherboard resources OK
0x00000034-0x00000035 Motherboard resources OK
0x00000038-0x00000039 Motherboard resources OK
0x0000003C-0x0000003D Motherboard resources OK
0x00000050-0x00000053 Motherboard resources OK
0x00000072-0x00000077 Motherboard resources OK
0x00000080-0x00000080 Motherboard resources OK
0x00000090-0x0000009F Motherboard resources OK
0x000000A4-0x000000A5 Motherboard resources OK
0x000000A8-0x000000A9 Motherboard resources OK
0x000000AC-0x000000AD Motherboard resources OK
0x000000B0-0x000000B5 Motherboard resources OK
0x000000B8-0x000000B9 Motherboard resources OK
0x000000BC-0x000000BD Motherboard resources OK
0x000004D0-0x000004D1 Motherboard resources OK
0x00001000-0x0000107F Motherboard resources OK
0x00001180-0x000011BF Motherboard resources OK
0x0000FE00-0x0000FE00 Motherboard resources OK
0x0000FE10-0x0000FE11 Motherboard resources OK
0x00000600-0x0000067F Motherboard resources OK
0x00000CA2-0x00000CA5 Motherboard resources OK
0x00000062-0x00000062 Motherboard resources OK
0x00000066-0x00000066 Motherboard resources OK
0x00000081-0x0000008F Direct memory access controller OK
0x000000C0-0x000000DF Direct memory access controller OK
0x000000F0-0x000000FE Numeric data processor OK
0x00000020-0x00000021 Programmable interrupt controller OK
0x000000A0-0x000000A1 Programmable interrupt controller OK
0x00000070-0x00000071 System CMOS/real time clock OK
0x00000061-0x00000061 System speaker OK
0x00000040-0x00000043 System timer OK

0x00000060-0x00000060 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard OK

0x00000064-0x00000064 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard OK

0x000003F8-0x000003FF Communications Port (COM1) OK
0x00001470-0x0000147F Intel(R) 82801EB Ultra ATA Storage Controllers OK

0x000001F0-0x000001F7 Primary IDE Channel OK
0x000003F6-0x000003F6 Primary IDE Channel OK
0x00000170-0x00000177 Secondary IDE Channel OK
0x00000376-0x00000376 Secondary IDE Channel OK
0x00001440-0x0000145F Intel(R) 82801EB SMBus Controller - 24D3 OK

[IRQs]

Resource Device Status
IRQ 9 Microsoft ACPI-Compliant System OK
IRQ 16 Intel(R) E7525/E7520/E7320 PCI Express Root Port A0 - 3595 OK

IRQ 16 Intel(R) E7525/E7520 PCI Express Root Port B0 - 3597 OK
IRQ 16 Broadcom NetXtreme Gigabit Ethernet #3 OK
IRQ 16 Intel(R) E7520 PCI Express Root Port B1 - 3598 OK
IRQ 16 Broadcom NetXtreme Gigabit Ethernet #4 OK
IRQ 16 Intel(R) E7520 PCI Express Root Port C0 - 3599 OK
IRQ 16 Intel(R) 82801EB USB Universal Host Controller - 24D2 OK
IRQ 16 RAGE XL PCI Family (Microsoft Corporation) OK
IRQ 5 Ethernet Controller OK

IRQ 19 Intel(R) 82801EB USB Universal Host Controller - 24D4 OK
IRQ 23 Intel(R) 82801EB USB2 Enhanced Host Controller - 24DD OK
IRQ 13 Numeric data processor OK
IRQ 8 System CMOS/real time clock OK
IRQ 0 System timer OK

IRQ 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard OK

IRQ 12 PS/2 Compatible Mouse OK

IRQ 4 Communications Port (COM1) OK
IRQ 14 Primary IDE Channel OK

IRQ 15 Secondary IDE Channel OK

IRQ 10 Intel(R) 82801EB SMBus Controller - 24D3 OK

[Memory]

Resource Device Status
0xA0000-0xBFFFF PCI bus OK

0xA0000-0xBFFFF RAGE XL PCI Family (Microsoft Corporation) OK
0xD0000-0xD3FFF PCI bus OK

0xD4000-0xD7FFF PCI bus OK

0xD8000-0xDBFFF PCI bus OK

0x40000000-0xFEBFFFFF PCI bus OK

0xD8100000-0xD81FFFFF Intel(R) E7525/E7520 PCI Express Root Port B0 - 3597 OK

0xD8100000-0xD81FFFFF Broadcom NetXtreme Gigabit Ethernet #3 OK
0xD8200000-0xD82FFFFF Intel(R) E7520 PCI Express Root Port B1 - 3598 OK

0xD8200000-0xD82FFFFF Broadcom NetXtreme Gigabit Ethernet #4 OK
0xD8300000-0xDBFFFFFF Intel(R) E7520 PCI Express Root Port C0 - 3599 OK

0xD8300000-0xDBFFFFFF Intel(R) 6700/6702PXH I/OxAPIC Interrupt Controller A - 0326 OK
0xDA000000-0xDBFFFFFF Intel(R) 6700PXH PCI Express-to-PCI Bridge A - 0329 OK

0xDA000000-0xDBFFFFFF Ethernet Controller OK
0xD8301000-0xD8301FFF Intel(R) 6700PXH I/OxAPIC Interrupt Controller B - 0327 OK

0xD8001000-0xD80013FF Intel(R) 82801EB USB2 Enhanced Host Controller - 24DD OK

0xDD000000-0xDDFFFFFF RAGE XL PCI Family (Microsoft Corporation) OK
0xDC000000-0xDC000FFF RAGE XL PCI Family (Microsoft Corporation) OK
0xE0000000-0xEFFFFFFF Motherboard resources OK

[Components]

[Multimedia]

[Audio Codecs]

CODEC Manufacturer Description Status
File Version Size
Creation Date
c:\windows\system32\msg711.acm
Microsoft Corporation
OK
C:\WINDOWS\system32\MSG711.A
CM 5.2.3790.0 (srv03_rtm.030324-
2048) 10.00 KB (10,240 bytes)
4/12/2005 1:42 PM
c:\windows\system32\tssoft32.acm DSP
GROUP, INC. OK
C:\WINDOWS\system32\TSSOFT32.
ACM 1.01 9.50 KB (9,728 bytes)
4/12/2005 1:43 PM
c:\windows\system32\msgsm32.acm
Microsoft Corporation
OK
C:\WINDOWS\system32\MSGSM32.
ACM 5.2.3790.0 (srv03_rtm.030324-
2048) 20.50 KB (20,992 bytes)
4/12/2005 1:42 PM
c:\windows\system32\msaud32.acm
Microsoft Corporation Windows
Media Audio Codec OK
C:\WINDOWS\system32\MSAUD32.
ACM 8.00.00.4487 288.00 KB (294,912
bytes) 4/12/2005 1:43 PM
c:\windows\system32\l3codeca.acm
Fraunhofer Institut Integrierte
Schaltungen IIS Fraunhofer IIS MPEG
Layer-3 Codec OK
C:\WINDOWS\system32\L3CODECA
.ACM 1, 9, 0, 0305 284.00 KB (290,816
bytes) 4/12/2005 1:43 PM
c:\windows\system32\msg723.acm
Microsoft Corporation
OK
C:\WINDOWS\system32\MSG723.A
CM 5.2.3790.1830 120.00
KB (122,880 bytes) 4/14/2005 10:01 AM

c:\windows\system32\imaadp32.acm
Microsoft Corporation
OK
C:\WINDOWS\system32\IMAADP32
.ACM 5.2.3790.0 (srv03_rtm.030324-
2048) 15.50 KB (15,872 bytes)
4/12/2005 1:42 PM
c:\windows\system32\sl_anet.acm Sipro
Lab Telecom Inc. Sipro Lab Telecom
Audio Codec OK
C:\WINDOWS\system32\SL_ANET.A
CM 3.02 84.00 KB (86,016
bytes) 4/12/2005 1:43 PM
c:\windows\system32\msadp32.acm
Microsoft Corporation
OK
C:\WINDOWS\system32\MSADP32.
ACM 5.2.3790.0 (srv03_rtm.030324-
2048) 14.50 KB (14,848 bytes)
4/12/2005 1:42 PM

[Video Codecs]

CODEC Manufacturer Description Status
File Version Size
Creation Date
c:\windows\system32\msh261.drv
Microsoft Corporation
OK
C:\WINDOWS\system32\MSH261.D
RV 5.2.3790.1830 184.00
KB (188,416 bytes) 4/14/2005 10:01 AM
c:\windows\system32\tsbyuv.dll
Microsoft Corporation
OK
C:\WINDOWS\system32\TSBYUV.D
LL 5.2.3790.0 (srv03_rtm.030324-
2048) 8.00 KB (8,192 bytes)
3/24/2003 5:50 PM
c:\windows\system32\msyuv.dll
Microsoft Corporation
OK
C:\WINDOWS\system32\MSYUV.DL
L 5.2.3790.0 (srv03_rtm.030324-
2048) 16.50 KB (16,896 bytes)
3/24/2003 5:49 PM
c:\windows\system32\msvidc32.dll
Microsoft Corporation
OK
C:\WINDOWS\system32\MSVIDC32
.DLL 5.2.3790.0 (srv03_rtm.030324-
2048) 26.50 KB (27,136 bytes)
4/12/2005 1:42 PM
c:\windows\system32\msrle32.dll
Microsoft Corporation
OK
C:\WINDOWS\system32\MSRLE32.
DLL 5.2.3790.0 (srv03_rtm.030324-
2048) 10.50 KB (10,752 bytes)
4/12/2005 1:42 PM
c:\windows\system32\iyuv_32.dll
Microsoft Corporation
OK
C:\WINDOWS\system32\IYUV_32.D
LL 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 46.50 KB
(47,616 bytes) 4/14/2005 10:01 AM

c:\windows\system32\msh263.drv
Microsoft Corporation
OK
C:\WINDOWS\system32\MSH263.D
RV 5.2.3790.1830 288.00
KB (294,912 bytes) 4/14/2005 10:01 AM

[CD-ROM]

Item Value

[Sound Device]

Item Value

[Display]

Item Value
Name RAGE XL PCI Family (Microsoft
Corporation)
PNP Device ID
PCI\VEN_1002&DEV_4752&SUBSYS
_3208103C&REV_27\4&3A321F38&0&08F0

Adapter TypeATI RAGE XL PCI (B41), ATI
Technologies Inc. compatible
Adapter Description RAGE XL PCI Family
(Microsoft Corporation)
Adapter RAM 8.00 MB (8,388,608 bytes)
Installed Drivers ati2drad.dll
Driver Version 5.10.3663.6013
INF File atiixpad.inf (ati2mpad section)
Color Planes 1
Color Table Entries 4294967296
Resolution 1024 x 768 x 85 hertz
Bits/Pixel 32
Memory Address 0xDD000000-
0xDDFFFFFF

I/O Port 0x00002000-0x000020FF
Memory Address 0xDC000000-
0xDC000FFF
IRQ Channel IRQ 16
I/O Port 0x000003B0-0x000003BB
I/O Port 0x000003C0-0x000003DF
Memory Address 0xA0000-0xBFFFF

Driver
c:\windows\system32\drivers\ati2m
pad.sys (5.10.3663.6013, 335.38 KB (343,424
bytes), 4/13/2005 3:31 AM)

[Infrared]

Item Value

[Input]

[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&369939D9&0

Number of Function Keys 12
I/O Port 0x00000060-0x00000060
I/O Port 0x00000064-0x00000064
IRQ Channel IRQ 1
Driver
c:\windows\system32\drivers\i8042
prt.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-
1447), 54.50 KB (55,808 bytes), 3/24/2003 5:01
PM)

[Pointing Device]

Item Value
Hardware Type PS/2 Compatible
Mouse
Number of Buttons 5
Status OK
PNP Device ID
ACPI\PNP0F13\4&369939D9&0

Power Management Supported No

Double Click Threshold 6
Handedness Right Handed Operation
IRQ Channel IRQ 12
Driver
c:\windows\system32\drivers\i8042
prt.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-
1447), 54.50 KB (55,808 bytes), 3/24/2003 5:01
PM)

[Modem]

Item Value

[Network]

[Adapter]

Item Value
Name [00000001] RAS Async Adapter

Adapter Type Not Available
Product Type RAS Async Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 3/6/2006 11:54 AM
Index 1
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000002] WAN Miniport (L2TP)

Adapter Type Not Available
Product Type WAN Miniport (L2TP)
Installed Yes
PNP Device ID
ROOT\MS_L2TPMINIPORT\0000

Last Reset 3/6/2006 11:54 AM
Index 2
Service Name Rasl2tp
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver
c:\windows\system32\drivers\rasl2tp.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 66.00 KB (67,584 bytes), 4/12/2005 1:42 PM)

Name [00000003] WAN Miniport (PPTP)

Adapter Type Wide Area Network (WAN)
Product Type WAN Miniport (PPTP)
Installed Yes
PNP Device ID
ROOT\MS_PPTPMINIPORT\0000

Last Reset 3/6/2006 11:54 AM
Index 3
Service Name PptpMiniport
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 50:50:54:50:30:30
Driver
c:\windows\system32\drivers\raspptp.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 61.00 KB (62,464 bytes), 4/12/2005 1:42 PM)

Name [00000004] WAN Miniport (PPPOE)

Adapter Type Wide Area Network (WAN)
Product Type WAN Miniport (PPPOE)
Installed Yes
PNP Device ID
ROOT\MS_PPPOEMINIPORT\0000

Last Reset 3/6/2006 11:54 AM
Index 4
Service Name RasPppoe
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 33:50:6F:45:30:30
Driver
c:\windows\system32\drivers\raspppoe.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 40.00 KB (40,960 bytes), 4/12/2005 1:42 PM)

Name [00000005] Direct Parallel
Adapter Type Not Available
Product Type Direct Parallel
Installed Yes
PNP Device ID
ROOT\MS_PTIMINIPORT\0000

Last Reset 3/6/2006 11:54 AM
Index 5
Service Name Raspti
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver
c:\windows\system32\drivers\raspti.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 19.50 KB (19,968 bytes), 4/12/2005 1:42 PM)

Name [00000006] WAN Miniport (IP)

Adapter Type Not Available
Product Type WAN Miniport (IP)
Installed Yes
PNP Device ID
ROOT\MS_NDISWANIP\0000

Last Reset 3/6/2006 11:54 AM
Index 6
Service Name NdisWan
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver
c:\windows\system32\drivers\ndiswan.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 91.00 KB (93,184 bytes), 4/12/2005 1:42 PM)

Name [00000007] Broadcom NetXtreme Gigabit Ethernet
Adapter Type Not Available
Product Type Broadcom NetXtreme Gigabit Ethernet
Installed Yes
PNP Device ID Not Available
Last Reset 3/6/2006 11:54 AM

Index 7
Service Name b57w2k
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled Yes
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000008] Broadcom NetXtreme Gigabit Ethernet
Adapter Type Not Available
Product Type Broadcom NetXtreme Gigabit Ethernet
Installed Yes
PNP Device ID Not Available
Last Reset 3/6/2006 11:54 AM
Index 8
Service Name b57w2k
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled Yes
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000009] WAN Miniport (Network Monitor)
Adapter Type Not Available
Product Type WAN Miniport (Network Monitor)

Installed Yes
PNP Device ID
ROOT\MS_NDISWANBH\0000

Last Reset 3/6/2006 11:54 AM
Index 9
Service Name NdisWan
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver
c:\windows\system32\drivers\ndiswan.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 91.00 KB (93,184 bytes), 4/12/2005 1:42 PM)

Name [00000010] Broadcom NetXtreme Gigabit Ethernet
Adapter Type Ethernet 802.3
Product Type Broadcom NetXtreme Gigabit Ethernet
Installed Yes
PNP Device ID
PCI\VEN_14E4&DEV_1659&SUBSYS_1659103C&REV_11\4&253DB27D&0&0020

Last Reset 3/6/2006 11:54 AM
Index 10
Service Name b57w2k
IP Address 15.1.101.86
IP Subnet 255.255.0.0
Default IP Gateway Not Available
DHCP Enabled Yes
DHCP Server 15.1.101.1
DHCP Lease Expires 3/14/2006 11:55 AM

DHCP Lease Obtained 3/6/2006 11:55 AM

MAC Address 00:15:60:09:E1:AE
Memory Address 0xD8100000-0xD81FFFFF
IRQ Channel IRQ 16
Driver
c:\windows\system32\drivers\b57xp32.sys (7.86.0.0 built by: WinDDK, 118.63 KB (121,472 bytes), 4/13/2005 4:24 PM)

Name [00000011] Broadcom NetXtreme Gigabit Ethernet
Adapter Type Ethernet 802.3
Product Type Broadcom NetXtreme Gigabit Ethernet
Installed Yes
PNP Device ID
PCI\VEN_14E4&DEV_1659&SUBSYS_1659103C&REV_11\4&1C834E48&0&0028

Last Reset 3/6/2006 11:54 AM
Index 11
Service Name b57w2k
IP Address 15.1.200.125
IP Subnet 255.255.255.0
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:15:60:09:E1:AF
Memory Address 0xD8200000-0xD82FFFFF
IRQ Channel IRQ 16
Driver
c:\windows\system32\drivers\b57xp32.sys (7.86.0.0 built by: WinDDK, 118.63 KB (121,472 bytes), 4/13/2005 4:24 PM)

[Protocol]

Item Value
Name MSAFD Tcpip [TCP/IP]
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 16 bytes
Maximum Message Size 0 bytes
Message Oriented No
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data Yes
Supports Graceful Closing Yes
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD Tcpip [UDP/IP]
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 16 bytes
Maximum Message Size 63.93 KB (65,467 bytes)
Message Oriented Yes
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting Yes

Name RSVP UDP Service Provider
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 16 bytes
Maximum Message Size 63.93 KB (65,467 bytes)
Message Oriented Yes
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption Yes
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting Yes

Name RSVP TCP Service Provider
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 16 bytes
Maximum Message Size 0 bytes
Message Oriented No
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption Yes
Supports Expedited Data Yes
Supports Graceful Closing Yes
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{5522ED49-FD5C-4788-B78F-57A4F86E5748}] SEQPACKET 5
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No
Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{5522ED49-FD5C-4788-B78F-57A4F86E5748}] DATAGRAM 5
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)

Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{F51C171B-E007-42CE-AD2F-A3FD3FFC2C99}] SEQPACKET 4
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{F51C171B-E007-42CE-AD2F-A3FD3FFC2C99}] DATAGRAM 4
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{356451BD-E9BA-4CDE-ADFA-95D45FC47A55}] SEQPACKET 3
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes

Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{356451BD-E9BA-4CDE-ADFA-95D45FC47A55}] DATAGRAM 3
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{6C8EF2B0-C570-41AD-BA17-47DDB867B581}] SEQPACKET 0
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{6C8EF2B0-C570-41AD-BA17-47DDB867B581}] DATAGRAM 0
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{C09F1971-DD34-4CF7-86C3-79FC40F767E0}] DATAGRAM 2
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{C09F1971-DD34-4CF7-86C3-79FC40F767E0}] SEQPACKET 1
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{F406FAC2-3DB8-4D61-8565-B2072EECB1F7}] SEQPACKET 2
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{F406FAC2-3DB8-4D61-8565-B2072EECB1F7}] DATAGRAM 2
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size 20 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No

Supports Multicasting No

[WinSock]

Item Value
File c:\windows\system32\winsock.dll

Size 2.80 KB (2,864 bytes)
Version 3.10

File c:\windows\system32\wsock32.dll

Size 22.00 KB (22,528 bytes)
Version 5.2.3790.0 (srv03_rtm.030324-2048)

[Ports]

[Serial]

Item Value
Name Communications Port (COM1)

Status OK
PNP Device ID ACPI\PNP0501\1

Maximum Input Buffer Size 0
Maximum Output Buffer Size No

Settable Baud Rate Yes
Settable Data Bits Yes
Settable Flow Control Yes
Settable Parity Yes
Settable Parity Check Yes
Settable Stop Bits Yes
Settable RLSD Yes
Supports RLSD Yes
Supports 16 Bit Mode No
Supports Special Characters No

Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy No
Abort Read/Write on Error No
Binary Mode Enabled Yes
Continue XMit on XOff No
CTS Outflow Control No
Discard NULL Bytes No
DSR Outflow Control 0
DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0

Error Replacement Enabled No

Event Character 0
Parity Check Enabled No
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
I/O Port 0x000003F8-0x000003FF
IRQ Channel IRQ 4
Driver
c:\windows\system32\drivers\serial.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 64.00 KB (65,536 bytes), 3/24/2003 3:40 PM)

[Parallel]

Item Value

[Storage]

[Drives]

Item Value
Drive C:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 74.53 GB (80,023,715,840 bytes)

Free Space 69.35 GB (74,468,433,920 bytes)

Volume Name
Volume Serial Number DCCFCBF1

[Disks]

Item Value
Description Disk drive
Manufacturer (Standard disk drives)
Model Maxtor 6L080M0
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 0
SCSI Target ID 0
Sectors/Track 63
Size 74.53 GB (80,023,749,120 bytes)

Total Cylinders 9,729
Total Sectors 156,296,385
Total Tracks 2,480,895
Tracks/Cylinder 255
Partition Disk #0, Partition #0
Partition Size 74.53 GB (80,023,716,864 bytes)

Partition Starting Offset 32,256 bytes

[SCSI]

Item Value

[IDE]

Item Value

Name Intel(R) 82801EB Ultra ATA Storage Controllers
Manufacturer Intel
Status OK
PNP Device ID
PCI\VEN_8086&DEV_24D1&SUBSYS_3208103C&REV_02\3&61AAA01&0&FA
I/O Port 0x00001470-0x0000147F
Driver
c:\windows\system32\drivers\pciide.sys (5.2.3790.0 (srv03_rtm.030324-2048), 5.50 KB (5,632 bytes), 3/24/2003 3:04 PM)

Name Primary IDE Channel
Manufacturer (Standard IDE ATA/ATAPI controllers)
Status OK
PNP Device ID
PCIIDE\IDECHANNEL\4&1D65F1F&0&0
I/O Port 0x000001F0-0x000001F7
I/O Port 0x000003F6-0x000003F6
IRQ Channel IRQ 14
Driver
c:\windows\system32\drivers\atapi.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 93.50 KB (95,744 bytes), 3/24/2003 3:04 PM)

Name Secondary IDE Channel
Manufacturer (Standard IDE ATA/ATAPI controllers)
Status OK
PNP Device ID
PCIIDE\IDECHANNEL\4&1D65F1F&0&1
I/O Port 0x00000170-0x00000177
I/O Port 0x00000376-0x00000376
IRQ Channel IRQ 15
Driver
c:\windows\system32\drivers\atapi.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 93.50 KB (95,744 bytes), 3/24/2003 3:04 PM)

[Printing]

Name Driver Port Name Server Name

[Problem Devices]

Device PNP Device ID Error Code
Ethernet Controller
PCI\VEN_14E4&DEV_164A&SUBSYS_3101103C&REV_02\5&55F0281&0&080030
This device is not configured correctly.

[USB]

Device PNP Device ID
Intel(R) 82801EB USB Universal Host Controller - 24D2
PCI\VEN_8086&DEV_24D2&SUBSYS_3208103C&REV_02\3&61AAA01&0&E8
Intel(R) 82801EB USB Universal Host Controller - 24D4
PCI\VEN_8086&DEV_24D4&SUBSYS_3208103C&REV_02\3&61AAA01&0&E9
Intel(R) 82801EB USB2 Enhanced Host Controller - 24DD
PCI\VEN_8086&DEV_24DD&SUBSYS_3208103C&REV_02\3&61AAA01&0&EF

[Software Environment]

[System Drivers]

Name Description File Type
Started Start Mode State
Status Error Control Accept
Pause Accept Stop

abiosdsk Abiosdsk Not Available Kernel Driver
No Disabled Stopped
OK Ignore No
No

acpi Microsoft ACPI Driver
c:\windows\system32\drivers\acpi.sys
Kernel Driver Yes Boot
Running OK Normal
No Yes

acpiec ACPIEC
c:\windows\system32\drivers\acpiec.sys
Kernel Driver No Disabled
Stopped OK Normal
No No

adpu160m adpu160m Not Available Kernel Driver
No Disabled Stopped
OK Normal No
No

adpu320 adpu320 Not Available Kernel Driver
No Disabled Stopped
OK Normal No
No

afcnt afcnt Not Available Kernel Driver
No Disabled Stopped
OK Normal No
No

afd AFD Networking Support Environment
c:\windows\system32\drivers\afd.sys
Kernel Driver Yes System
Running OK Normal
No Yes

aha154x Aha154x Not Available Kernel Driver
No Disabled Stopped
OK Normal No
No

aic78u2 aic78u2 Not Available Kernel Driver
No Disabled Stopped
OK Normal No
No

aic78xx aic78xx Not Available Kernel Driver
No Disabled Stopped
OK Normal No
No

aliide AliIde Not Available Kernel Driver
No Disabled Stopped
OK Normal No
No

alkernel Altiris Kernel Driver
c:\windows\system32\drivers\alkernel.sys
Kernel Driver Yes Manual
Running OK Normal
No Yes

asyncmac RAS Asynchronous Media Driver
c:\windows\system32\drivers\asyncmac.sys
Kernel Driver No Manual
Stopped OK Normal
No No

```
atapi       Standard IDE/ESDI Hard Disk
Controller
            c:\windows\system32\drivers\atapi.
sys         Kernel Driver Yes          Boot
            Running       OK           Normal
            No            Yes
atdisk      Atdisk        Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Ignore       No
            No
ati2mpad    ati2mpad
            c:\windows\system32\drivers\ati2m
pad.sys     Kernel Driver Yes          Manual
            Running       OK           Ignore
            No            Yes
atmarpc     ATM ARP Client Protocol
            c:\windows\system32\drivers\atmar
pc.sys      Kernel Driver No           Manual
            Stopped       OK           Normal
            No            No
audstub     Audio Stub Driver
            c:\windows\system32\drivers\audst
ub.sys      Kernel Driver Yes          Manual
            Running       OK           Normal
            No            Yes
b57w2k      Broadcom NetXtreme Gigabit
Ethernet
            c:\windows\system32\drivers\b57x
p32.sys     Kernel Driver Yes          Manual
            Running       OK           Normal
            No            Yes
beep        Beep
            c:\windows\system32\drivers\beep.
sys         Kernel Driver Yes          System
            Running       OK           Normal
            No            Yes
cbidf2k     cbidf2k
            c:\windows\system32\drivers\cbidf2
k.sys       Kernel Driver No           Disabled
            Stopped       OK           Normal
            No            No
cd20xrnt    cd20xrnt      Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No
cdfs        Cdfs
            c:\windows\system32\drivers\cdfs.s
ys          File System Driver         No
            Disabled      Stopped      OK
            Normal        No           No

cdrom       Cdrom
            c:\windows\system32\drivers\cdro
m.sys       Kernel Driver No           System
            Stopped       OK           Ignore
            No            No
changer     Changer       Not Available Kernel
Driver      No            System       Stopped
            OK            Ignore       No
            No
clusdisk    Cluster Disk Driver
            c:\windows\system32\drivers\clusdi
sk.sys      Kernel Driver No           Disabled
            Stopped       OK           Normal
            No            No
cmdide      CmdIde        Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No
cpqarray    Cpqarray      Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No

cpqarry2    cpqarry2      Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
cpqcissm    cpqcissm      Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No
cpqfcalm    cpqfcalm      Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No
crcdisk     CRC Disk Filter Driver
            c:\windows\system32\drivers\crcdis
k.sys       Kernel Driver Yes          Boot
            Running       OK           Normal
            No            Yes
dac960nt    dac960nt      Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No
dellcerc    dellcerc      Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No
dfsdriver   DfsDriver
            c:\windows\system32\drivers\dfs.sy
s           File System Driver         Yes
            Boot          Running      OK
            Normal        No           Yes

disk        Disk Driver
            c:\windows\system32\drivers\disk.s
ys          Kernel Driver Yes          Boot
            Running       OK           Normal
            No            Yes
dmboot      dmboot
            c:\windows\system32\drivers\dmbo
ot.sys      Kernel Driver No           Disabled
            Stopped       OK           Normal
            No            No
dmio        Logical Disk Manager Driver
            c:\windows\system32\drivers\dmio.
sys         Kernel Driver Yes          Boot
            Running       OK           Normal
            No            Yes
dmload      dmload
            c:\windows\system32\drivers\dmlo
ad.sys      Kernel Driver Yes          Boot
            Running       OK           Normal
            No            Yes
dpti2o      dpti2o        Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No
fastfat     Fastfat
            c:\windows\system32\drivers\fastfa
t.sys       File System Driver         No
            Disabled      Stopped      OK
            Normal        No           No

fdc         Fdc
            c:\windows\system32\drivers\fdc.sy
s           Kernel Driver No           System
            Stopped       OK           Ignore
            No            No
fips        Fips
            c:\windows\system32\drivers\fips.s
ys          Kernel Driver Yes          System
            Running       OK           Normal
            No            Yes
flpydisk    Flpydisk
            c:\windows\system32\drivers\flpydi
sk.sys      Kernel Driver No           System
            Stopped       OK           Ignore
            No            No

fltmgr      FltMgr
            c:\windows\system32\drivers\fltmgr
.sys        File System Driver         Yes
            Boot          Running      OK
            Normal        No           Yes
ftdisk      Volume Manager Driver
            c:\windows\system32\drivers\ftdisk.
sys         Kernel Driver Yes          Boot
            Running       OK           Normal
            No            Yes
gpc         Generic Packet Classifier
            c:\windows\system32\drivers\msgp
c.sys       Kernel Driver Yes          Manual
            Running       OK           Normal
            No            Yes

hpn         hpn           Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No

hpt3xx      hpt3xx        Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No
http        HTTP
            c:\windows\system32\drivers\http.s
ys          Kernel Driver Yes          Manual
            Running       OK           Normal
            No            Yes
i2omgmt     i2omgmt       Not Available Kernel
Driver      No            System       Stopped
            OK            Normal       No
            No
i2omp       i2omp         Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No
i8042prt    i8042 Keyboard and PS/2 Mouse
Port Driver
            c:\windows\system32\drivers\i8042
prt.sys     Kernel Driver Yes          System
            Running       OK           Normal
            No            Yes
iirsp       iirsp         Not Available Kernel
Driver      No            Disabled     Stopped
            OK            Normal       No
            No
intelide    IntelIde
            c:\windows\system32\drivers\intelid
e.sys       Kernel Driver Yes          Boot
            Running       OK           Normal
            No            Yes
intelppm    Intel Processor Driver
            c:\windows\system32\drivers\intelp
pm.sys      Kernel Driver Yes          Manual
            Running       OK           Normal
            No            Yes
ip6fw       IPv6 Windows Firewall Driver
            c:\windows\system32\drivers\ip6fw
.sys        Kernel Driver No           Manual
            Stopped       OK           Normal
            No            No
ipfilterdriver IP Traffic Filter Driver
            c:\windows\system32\drivers\ipfltdr
v.sys       Kernel Driver No           Manual
            Stopped       OK           Normal
            No            No
ipinip      IP in IP Tunnel Driver
            c:\windows\system32\drivers\ipinip.
sys         Kernel Driver No           Manual
            Stopped       OK           Normal
            No            No
```

ipnat IP Network Address Translator
c:\windows\system32\drivers\ipnat.
sys Kernel Driver No Manual
Stopped OK Normal
No No
ipsec IPSEC driver
c:\windows\system32\drivers\ipsec.
sys Kernel Driver Yes System
Running OK Normal
No Yes
ipsraidn ipsraidn Not Available Kernel
Driver No Disabled Stopped
OK Normal No
No
irenum IR Enumerator Service
c:\windows\system32\drivers\irenu
m.sys Kernel Driver No Manual
Stopped OK Normal
No No
isapnp PnP ISA/EISA Bus Driver
c:\windows\system32\drivers\isapn
p.sys Kernel Driver Yes Boot
Running OK Critical
No Yes
kbdclass Keyboard Class Driver
c:\windows\system32\drivers\kbdcl
ass.sys Kernel Driver Yes System
Running OK Normal
No Yes
ksecdd KSecDD
c:\windows\system32\drivers\ksecd
d.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
lp6nds35 lp6nds35 Not Available Kernel
Driver No Disabled Stopped
OK Normal No
No
mnmdd mnmdd
c:\windows\system32\drivers\mnm
dd.sys Kernel Driver Yes System
Running OK Ignore
No Yes
modem Modem
c:\windows\system32\drivers\mode
m.sys Kernel Driver No Manual
Stopped OK Ignore
No No
mouclass Mouse Class Driver
c:\windows\system32\drivers\moucl
ass.sys Kernel Driver Yes System
Running OK Normal
No Yes
mountmgr Mount Point Manager
c:\windows\system32\drivers\moun
tmgr.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
mraid35x mraid35x Not Available Kernel
Driver No Disabled Stopped
OK Normal No
No
mrxdav WebDav Client Redirector
c:\windows\system32\drivers\mrxd
av.sys File System Driver No
Manual Stopped OK
Normal No No

mrxsmb MRXSMB
c:\windows\system32\drivers\mrxs
mb.sys File System Driver Yes
System Running OK
Normal No Yes

msfs Msfs
c:\windows\system32\drivers\msfs.
sys File System Driver Yes
System Running OK
Normal No Yes
mssmbios Microsoft System Management
BIOS Driver
c:\windows\system32\drivers\mssm
bios.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
mup Mup
c:\windows\system32\drivers\mup.
sys File System Driver Yes
Boot Running OK
Normal No Yes

ndis NDIS System Driver
c:\windows\system32\drivers\ndis.s
ys Kernel Driver Yes Boot
Running OK Normal
No Yes
ndistapi Remote Access NDIS TAPI Driver
c:\windows\system32\drivers\ndista
pi.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
ndisuio NDIS Usermode I/O Protocol
c:\windows\system32\drivers\ndisui
o.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
ndiswan Remote Access NDIS WAN Driver
c:\windows\system32\drivers\ndisw
an.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
ndproxy NDIS Proxy
c:\windows\system32\drivers\ndpro
xy.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
netbios NetBIOS Interface
c:\windows\system32\drivers\netbi
os.sys File System Driver Yes
System Running OK
Normal No Yes

netbt NetBios over Tcpip
c:\windows\system32\drivers\netbt.
sys Kernel Driver Yes System
Running OK Normal
No Yes
nfrd960 nfrd960 Not Available Kernel
Driver No Disabled Stopped
OK Normal No
No
nm Network Monitor Driver
c:\windows\system32\drivers\nmnt.
sys Kernel Driver No Manual
Stopped OK Normal
No No
npfs Npfs
c:\windows\system32\drivers\npfs.s
ys File System Driver Yes
System Running OK
Normal No Yes

ntfs Ntfs
c:\windows\system32\drivers\ntfs.s
ys File System Driver Yes
Disabled Running OK
Normal No Yes

null Null
c:\windows\system32\drivers\null.s
ys Kernel Driver Yes System
Running OK Normal
parport Parport Yes
c:\windows\system32\drivers\parpo
rt.sys Kernel Driver No Manual
Stopped OK Ignore
No No
partmgr Partition Manager
c:\windows\system32\drivers\partm
gr.sys Kernel Driver Yes Boot
Running OK Normal
No Yes

pci PCI Bus Driver
c:\windows\system32\drivers\pci.sy
s Kernel Driver Yes Boot
Running OK Critical
No Yes

pciide PCIIde
c:\windows\system32\drivers\pciide
.sys Kernel Driver Yes Boot
Running OK Normal
No Yes
pcmcia Pcmcia
c:\windows\system32\drivers\pcmci
a.sys Kernel Driver No Disabled
Stopped OK Normal
No No
pdcomp PDCOMP Not Available Kernel
Driver No Manual Stopped
OK Ignore No
No
pdframe PDFRAME Not Available Kernel
Driver No Manual Stopped
OK Ignore No
No
pdreli PDRELI Not Available Kernel
Driver No Manual Stopped
OK Ignore No
No
pdrframe PDRFRAME Not Available Kernel
Driver No Manual Stopped
OK Ignore No
No
perc2 perc2 Not Available Kernel
Driver No Disabled Stopped
OK Normal No
No
perc2hib perc2hib Not Available Kernel
Driver No Disabled Stopped
OK Normal No
No
pgtrackr01 Page Tracker1 for X86perfsys
\??\c:\lop1.1\pgtrackr01.sys
Kernel Driver No Manual
Stopped OK Ignore
No No
pptpminiport WAN Miniport (PPTP)
c:\windows\system32\drivers\raspp
tp.sys Kernel Driver Yes Manual
Running OK Normal
No Yes
processor Processor Driver
c:\windows\system32\drivers\proce
ssr.sys Kernel Driver No Manual
Stopped OK Normal
No No
ptilink Direct Parallel Link Driver
c:\windows\system32\drivers\ptilink
.sys Kernel Driver Yes Manual
Running OK Normal
No Yes

```
ql1080          ql1080          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
ql10wnt         Ql10wnt         Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
ql12160         ql12160         Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
ql1240          ql1240          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
ql1280          ql1280          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
ql2100          ql2100          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
ql2200          ql2200          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
ql2300          ql2300
                c:\windows\system32\drivers\ql230
0.sys           Kernel Driver   Yes           Boot
                Running         OK            Normal
                No              Yes
qlvika          qlvika
                c:\windows\system32\drivers\qlvika
.sys            Kernel Driver   No            Auto
                Stopped         OK            Normal
                No              No
rasacd          Remote Access Auto Connection
Driver
                c:\windows\system32\drivers\rasac
d.sys           Kernel Driver   Yes           System
                Running         OK            Normal
                No              Yes
rasl2tp         WAN Miniport (L2TP)
                c:\windows\system32\drivers\rasl2t
p.sys           Kernel Driver   Yes           Manual
                Running         OK            Normal
                No              Yes
raspppoe        Remote Access PPPOE Driver
                c:\windows\system32\drivers\raspp
poe.sys         Kernel Driver   Yes           Manual
                Running         OK            Normal
                No              Yes
raspti          Direct Parallel
                c:\windows\system32\drivers\raspti
.sys            Kernel Driver   Yes           Manual
                Running         OK            Normal
                No              Yes
rdbss           Rdbss
                c:\windows\system32\drivers\rdbss.
sys             File System Driver            Yes
                System          Running       OK
                Normal          No            Yes

rdpcdd          RDPCDD
                c:\windows\system32\drivers\rdpcd
d.sys           Kernel Driver   Yes           System
                Running         OK            Ignore
                No              Yes

rdpdr           Terminal Server Device Redirector
Driver
                c:\windows\system32\drivers\rdpdr.
sys             Kernel Driver   Yes           Manual
                Running         OK            Normal
rdpwd           RDPWD           Yes
                c:\windows\system32\drivers\rdpw
d.sys           Kernel Driver   Yes           Manual
                Running         OK            Ignore
                No              Yes
secdrv          Secdrv
                c:\windows\system32\drivers\secdr
v.sys           Kernel Driver   No            Manual
                Stopped         OK            Normal
                No              No
serenum         Serenum Filter Driver
                c:\windows\system32\drivers\seren
um.sys          Kernel Driver   Yes           Manual
                Running         OK            Normal
                No              Yes
serial          Serial port driver
                c:\windows\system32\drivers\serial.
sys             Kernel Driver   Yes           System
                Running         OK            Ignore
                No              Yes
sfloppy         Sfloppy
                c:\windows\system32\drivers\sflopp
y.sys           Kernel Driver   No            System
                Stopped         OK            Ignore
                No              No
simbad          Simbad          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
sparrow         Sparrow         Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
srv             Srv
                c:\windows\system32\drivers\srv.sy
s               File System Driver            Yes
                Manual          Running       OK
                Normal          No            Yes

swenum          Software Bus Driver
                c:\windows\system32\drivers\swen
um.sys          Kernel Driver   Yes           Manual
                Running         OK            Normal
                No              Yes
symc810         symc810         Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
symc8xx         symc8xx         Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
symmpi          symmpi          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
sym_hi          sym_hi          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
sym_u3          sym_u3          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
tcpip           TCP/IP Protocol Driver
                c:\windows\system32\drivers\tcpip.
sys             Kernel Driver   Yes           System
                Running         OK            Normal
                No              Yes

tdpipe          TDPIPE
                c:\windows\system32\drivers\tdpip
e.sys           Kernel Driver   No            Manual
                Stopped         OK            Ignore
tdtcp           TDTCP           No
                c:\windows\system32\drivers\tdtcp.
sys             Kernel Driver   Yes           Manual
                Running         OK            Ignore
                No              Yes
termdd          Terminal Device Driver
                c:\windows\system32\drivers\termd
d.sys           Kernel Driver   Yes           System
                Running         OK            Normal
                No              Yes

toside          TosIde          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No

udfs            Udfs
                c:\windows\system32\drivers\udfs.s
ys              File System Driver            No
                Disabled        Stopped       OK
                Normal          No            No

ultra           ultra           Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
update          Microcode Update Driver
                c:\windows\system32\drivers\updat
e.sys           Kernel Driver   Yes           Manual
                Running         OK            Normal
                No              Yes
usbehci         Microsoft USB 2.0 Enhanced Host
Controller Miniport Driver
                c:\windows\system32\drivers\usbeh
ci.sys          Kernel Driver   Yes           Manual
                Running         OK            Normal
                No              Yes
usbhub          USB2 Enabled Hub
                c:\windows\system32\drivers\usbhu
b.sys           Kernel Driver   Yes           Manual
                Running         OK            Normal
                No              Yes
usbohci         Microsoft USB Open Host Controller
Miniport Driver
                c:\windows\system32\drivers\usboh
ci.sys          Kernel Driver   No            Manual
                Stopped         OK            Normal
                No              No
usbstor         USB Mass Storage Driver
                c:\windows\system32\drivers\usbst
or.sys          Kernel Driver   No            Manual
                Stopped         OK            Normal
                No              No
usbuhci         Microsoft USB Universal Host
Controller Miniport Driver
                c:\windows\system32\drivers\usbuh
ci.sys          Kernel Driver   Yes           Manual
                Running         OK            Normal
                No              Yes
vgasave         VGA Display Controller.
                c:\windows\system32\drivers\vga.s
ys              Kernel Driver   Yes           System
                Running         OK            Ignore
                No              Yes
viaide          ViaIde          Not Available Kernel
Driver          No              Disabled      Stopped
                OK              Normal        No
                No
```

```
volsnap         Storage volumes
                c:\windows\system32\drivers\volsn
ap.sys          Kernel Driver   Yes             Boot
                Running         OK              Normal
                No              Yes
wanarp          Remote Access IP ARP Driver
                c:\windows\system32\drivers\wana
rp.sys          Kernel Driver   Yes             Manual
                Running         OK              Normal
                No              Yes
wdica           WDICA           Not Available   Kernel
Driver          No              Manual          Stopped
                OK              Ignore          No
                No
wlbs            Network Load Balancing
                c:\windows\system32\drivers\wlbs.
sys             Kernel Driver   No              Manual
                Stopped         OK              Normal
                No              No
x86perfsys      Low Overhead Profiler
                \??\c:\lop1.1\x86perfsys.sys
                Kernel Driver   No              Manual
                Stopped         OK              Ignore
                No              No

[Signed Drivers]

Device Name     Signed          Device Class    Driver
Version         Driver Date     Manufacturer    INF
Name            Driver Name     Device ID
Microsoft System Management BIOS Driver
                Yes             SYSTEM
                5.2.3790.1830
                10/1/2002       (Standard system
devices)        machine.inf     Not Available
                ROOT\SYSTEM\0002
Microcode Update Device         Yes             SYSTEM
                5.2.3790.0      10/1/2002
                (Standard system devices)
                machine.inf     Not Available
                ROOT\SYSTEM\0001
Plug and Play Software Device Enumerator
                Yes             SYSTEM
                5.2.3790.0      10/1/2002
                (Standard system devices)
                machine.inf     Not Available
                ROOT\SYSTEM\0000
Terminal Server Mouse Driver    Yes
                SYSTEM          5.2.3790.0
                10/1/2002       (Standard system
devices)        machine.inf     Not Available
                ROOT\RDP_MOU\0000
Terminal Server Keyboard Driver Yes
                SYSTEM          5.2.3790.0
                10/1/2002       (Standard system
devices)        machine.inf     Not Available
                ROOT\RDP_KBD\0000
Terminal Server Device Redirector       Yes
                SYSTEM          5.2.3790.0
                10/1/2002       (Standard system
devices)        machine.inf     Not Available
                ROOT\RDPDR\0000
Direct Parallel                 Yes             NET
                5.2.3790.0      10/1/2002
                Microsoft       netrasa.inf     Not
Available       ROOT\MS_PTIMINIPORT\0000

WAN Miniport (PPTP)             Yes             NET
                5.2.3790.0      10/1/2002
                Microsoft       netrasa.inf     Not
Available       ROOT\MS_PPTPMINIPORT\0000

WAN Miniport (PPPOE)            Yes             NET
                5.2.3790.0      10/1/2002
                Microsoft       netrasa.inf     Not
Available       ROOT\MS_PPPOEMINIPORT\0000
WAN Miniport (IP)               Yes             NET
                5.2.3790.0      10/1/2002
                Microsoft       netrasa.inf     Not
Available       ROOT\MS_NDISWANIP\0000

WAN Miniport (Network Monitor)  Yes
                NET             5.2.3790.1830
                10/1/2002       Microsoft
                netrasa.inf     Not Available
                ROOT\MS_NDISWANBH\0000

WAN Miniport (L2TP)             Yes             NET
                5.2.3790.0      10/1/2002
                Microsoft       netrasa.inf     Not
Available       ROOT\MS_L2TPMINIPORT\0000

Video CodecsYes                 MEDIA
                5.2.3790.0      10/1/2002
                (Standard system devices) wave.inf
                Not Available
                ROOT\MEDIA\MS_MMVID
Legacy Video Capture Devices    Yes
                MEDIA           5.2.3790.0
                10/1/2002       (Standard system
devices)        wave.inf        Not Available
                ROOT\MEDIA\MS_MMVCD
Media Control Devices           Yes             MEDIA
                5.2.3790.0      10/1/2002
                (Standard system devices) wave.inf
                Not Available
                ROOT\MEDIA\MS_MMMCI
Legacy Audio Drivers            Yes             MEDIA
                5.2.3790.0      10/1/2002
                (Standard system devices) wave.inf
                Not Available
                ROOT\MEDIA\MS_MMDRV
Audio CodecsYes                 MEDIA
                5.2.3790.0      10/1/2002
                (Standard system devices) wave.inf
                Not Available
                ROOT\MEDIA\MS_MMACM
Low Overhead Profiler           Not Available
                LEGACYDRIVER                    Not
Available       Not Available   Not Available   Not
Available       Not Available
                ROOT\LEGACY_X86PERFSYS\0000

Remote Access IP ARP Driver     Not
Available       LEGACYDRIVER                    Not
Available       Not Available   Not Available   Not
Available       Not Available
                ROOT\LEGACY_WANARP\0000

volsnap         Not Available   LEGACYDRIVER
                Not Available   Not Available   Not
Available       Not Available   Not Available
                ROOT\LEGACY_VOLSNAP\0000

VGA Display Controller.         Not Available
                LEGACYDRIVER                    Not
Available       Not Available   Not Available   Not
Available       Not Available
                ROOT\LEGACY_VGASAVE\0000

TDTCP           Not Available   LEGACYDRIVER
                Not Available   Not Available   Not
Available       Not Available   Not Available
                ROOT\LEGACY_TDTCP\0000

TCP/IP Protocol Driver          Not Available
                LEGACYDRIVER                    Not
Available       Not Available   Not Available   Not
Available       Not Available
                ROOT\LEGACY_TCPIP\0000
sacdrv          Not Available   LEGACYDRIVER
                Not Available   Not Available   Not
Available       Not Available   Not Available
                ROOT\LEGACY_SACDRV\0000

RDPWD           Not Available   LEGACYDRIVER
                Not Available   Not Available   Not
Available       Not Available   Not Available
                ROOT\LEGACY_RDPWD\0000

RDPCDD          Not Available   LEGACYDRIVER
                Not Available   Not Available   Not
Available       Not Available   Not Available
                ROOT\LEGACY_RDPCDD\0000

Remote Access Auto Connection Driver    Not
Available       LEGACYDRIVER                    Not
Available       Not Available   Not Available   Not
Available       Not Available
                ROOT\LEGACY_RASACD\0000


ql2300          Not Available   LEGACYDRIVER
                Not Available   Not Available   Not
Available       Not Available   Not Available
                ROOT\LEGACY_QL2300\0000

Page Tracker1 for X86perfsys            Not
Available       LEGACYDRIVER                    Not
Available       Not Available   Not Available   Not
Available       Not Available
                ROOT\LEGACY_PGTRACKR01\0000

Partition Manager               Not Available
                LEGACYDRIVER                    Not
Available       Not Available   Not Available   Not
Available       Not Available
                ROOT\LEGACY_PARTMGR\0000

Null            Not Available   LEGACYDRIVER
                Not Available   Not Available   Not
Available       Not Available   Not Available
                ROOT\LEGACY_NULL\0000
Network Monitor Driver          Not Available
                LEGACYDRIVER                    Not
Available       Not Available   Not Available   Not
Available       Not Available
                ROOT\LEGACY_NM\0000
NetBios over Tcpip              Not Available
                LEGACYDRIVER                    Not
Available       Not Available   Not Available   Not
Available       Not Available
                ROOT\LEGACY_NETBT\0000

NDProxy         Not Available   LEGACYDRIVER
                Not Available   Not Available   Not
Available       Not Available   Not Available
                ROOT\LEGACY_NDPROXY\0000

NDIS Usermode I/O Protocol              Not
Available       LEGACYDRIVER                    Not
Available       Not Available   Not Available   Not
Available       Not Available
                ROOT\LEGACY_NDISUIO\0000
```

Remote Access NDIS TAPI Driver Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_NDISTAPI\0000

NDIS System Driver Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_NDIS\0000

mountmgr Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_MOUNTMGR\0000

modem Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_MODEM\0000

mnmdd Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_MNMDD\0000

ksecdd Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_KSECDD\0000

IPSEC driver Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_IPSEC\0000

IntelIde Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_INTELIDE\0000

HTTP Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_HTTP\0000

Generic Packet Classifier Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_GPC\0000

Fips Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_FIPS\0000

dmload Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_DMLOAD\0000

dmboot Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_DMBOOT\0000

CRC Disk Filter Driver Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_CRCDISK\0000

Beep Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_BEEP\0000

Altiris Kernel Driver Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_ALKERNEL\0000

AFD Networking Support Environment Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available
ROOT\LEGACY_AFD\0000

Generic volume Yes VOLUME 5.2.3790.1830 10/1/2002 Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATURE19C119C0OFFSET7E00LENGTH12A1C90400

Volume Manager Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available
ROOT\FTDISK\0000

Logical Disk Manager Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available
ROOT\DMIO\0000

ACPI Fixed Feature Button Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\FIXEDBUTTON\2&DABA3FF&0

ACPI Power Button Yes SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0C0C\3&61AAA01&0

Intel(R) 82801EB SMBus Controller - 24D3 Yes SYSTEM 7.0.0.1011 1/10/2005 Intel ich5core.inf Not Available
PCI\VEN_8086&DEV_24D3&SUBSYS_3208103C&REV_02\3&61AAA01&0&FB

Secondary IDE Channel Yes HDC 5.2.3790.1830 10/1/2002 (Standard IDE ATA/ATAPI controllers) mshdc.inf Not Available
PCIIDE\IDECHANNEL\4&1D65F1F&0&1

Disk drive Yes DISKDRIVE 5.2.3790.0 10/1/2002 (Standard disk drives) disk.inf Not Available
IDE\DISKMAXTOR_6L080M0__________BANC1G10\324C4E3032424753202020202020202020202020

Primary IDE Channel Yes HDC 5.2.3790.1830 10/1/2002 (Standard IDE ATA/ATAPI controllers) mshdc.inf Not Available
PCIIDE\IDECHANNEL\4&1D65F1F&0&0

Intel(R) 82801EB Ultra ATA Storage Controllers Yes HDC 6.3.0.1005 11/17/2004 Intel ich5ide.inf Not Available
PCI\VEN_8086&DEV_24D1&SUBSYS_3208103C&REV_02\3&61AAA01&0&FA

Generic Bus Yes SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\2

Communications Port Yes PORTS 5.2.3790.0 10/1/2002 (Standard port types) msports.inf Not Available
ACPI\PNP0501\1

Generic Bus Yes SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A05\1

PS/2 Compatible Mouse Yes MOUSE 5.2.3790.1830 10/1/2002 Microsoft msmouse.inf Not Available
ACPI\PNP0F13\4&369939D9&0

Standard 101/102-Key or Microsoft Natural PS/2 Keyboard Yes KEYBOARD 5.2.3790.0 10/1/2002 (Standard keyboards) keyboard.inf Not Available
ACPI\PNP0303\4&369939D9&0

System timer Yes SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0100\4&369939D9&0

System speaker Yes SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0800\4&369939D9&0

System CMOS/real time clock Yes SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0B00\4&369939D9&0

Programmable interrupt controller Yes SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0000\4&369939D9&0

Numeric data processor Yes SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0C04\4&369939D9&0

Direct memory access controller Yes SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0200\4&369939D9&0

Motherboard resources Yes SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0C02\1F

ISAPNP Read Data Port Yes SYSTEM 5.2.3790.0 10/1/2002 (Standard system devices) machine.inf Not Available
ISAPNP\READDATAPORT\0

Intel(R) 82801EB LPC Interface Controller - 24D0
Yes SYSTEM
7.0.0.1011 1/10/2005 Intel
ich5core.inf Not Available
PCI\VEN_8086&DEV_24D0&SUBSYS
_00000000&REV_02\3&61AAA01&0&F8
Plug and Play Monitor Yes
MONITOR 5.1.2001.0
6/6/2001 (Standard monitor
types) monitor.inf Not Available
DISPLAY\AVO0000\5&B6946BC&0&
80000001&07&01
RAGE XL PCI Family (Microsoft Corporation)
Yes DISPLAY
5.10.2600.6014
8/8/2001 ATI Technologies Inc.
atiixpad.inf Not Available
PCI\VEN_1002&DEV_4752&SUBSYS
_3208103C&REV_27\4&3A321F38&0&08F0

Intel(R) 82801 PCI Bridge - 244E Yes
SYSTEM 7.0.0.1011
1/10/2005 Intel
dmi_pci.inf Not Available
PCI\VEN_8086&DEV_244E&SUBSYS
_00000000&REV_C2\3&61AAA01&0&F0
USB Root Hub Yes USB
5.2.3790.1830
10/1/2002 (Standard USB Host
Controller) usbport.inf Not Available
USB\ROOT_HUB20\4&D12AFCF&0

Intel(R) 82801EB USB2 Enhanced Host Controller
- 24DD Yes USB
6.3.0.1005 11/17/2004 Intel
ich5usb.inf Not Available
PCI\VEN_8086&DEV_24DD&SUBSY
S_3208103C&REV_02\3&61AAA01&0&EF

USB Root Hub Yes USB
5.2.3790.1830
10/1/2002 (Standard USB Host
Controller) usbport.inf Not Available
USB\ROOT_HUB\4&2F4E9900&0

Intel(R) 82801EB USB Universal Host Controller -
24D4 Yes USB
6.3.0.1005 11/17/2004 Intel
ich5usb.inf Not Available
PCI\VEN_8086&DEV_24D4&SUBSYS
_3208103C&REV_02\3&61AAA01&0&E9
USB Root Hub Yes USB
5.2.3790.1830
10/1/2002 (Standard USB Host
Controller) usbport.inf Not Available
USB\ROOT_HUB\4&27E207BF&0

Intel(R) 82801EB USB Universal Host Controller -
24D2 Yes USB
6.3.0.1005 11/17/2004 Intel
ich5usb.inf Not Available
PCI\VEN_8086&DEV_24D2&SUBSYS
_3208103C&REV_02\3&61AAA01&0&E8
Intel(R) 6700PXH I/OxAPIC Interrupt Controller B
- 0327 Yes SYSTEM
6.3.0.1005 11/17/2004 Intel
e7520.inf Not Available
PCI\VEN_8086&DEV_0327&SUBSYS
_3208103C&REV_09\4&39D7C96F&0&0330

Intel(R) 6700PXH PCI Express-to-PCI Bridge B -
032A Yes SYSTEM
6.3.0.1005 11/17/2004 Intel
e7520.inf Not Available
PCI\VEN_8086&DEV_032A&SUBSYS
_00000000&REV_09\4&39D7C96F&0&0230
Intel(R) 6700/6702PXH I/OxAPIC Interrupt
Controller A - 0326 Yes SYSTEM
6.3.0.1005 11/17/2004 Intel
e7520.inf Not Available
PCI\VEN_8086&DEV_0326&SUBSYS
_3208103C&REV_09\4&39D7C96F&0&0130

Ethernet Controller Not Available Not
Available Not Available Not Available Not
Available Not Available Not Available
PCI\VEN_14E4&DEV_164A&SUBSYS
_3101103C&REV_02\5&55F0281&0&080030

Intel(R) 6700PXH PCI Express-to-PCI Bridge A -
0329 Yes SYSTEM
6.3.0.1005 11/17/2004 Intel
e7520.inf Not Available
PCI\VEN_8086&DEV_0329&SUBSYS
_00000000&REV_09\4&39D7C96F&0&0030

Intel(R) E7520 PCI Express Root Port C0 - 3599
Yes SYSTEM
6.3.0.1005 11/17/2004 Intel
e7520.inf Not Available
PCI\VEN_8086&DEV_3599&SUBSYS
_00000000&REV_0C\3&61AAA01&0&30
Broadcom NetXtreme Gigabit Ethernet Yes
NET 7.86.0.0
8/23/2004 Broadcom oem3.inf
Not Available
PCI\VEN_14E4&DEV_1659&SUBSYS
_1659103C&REV_11\4&1C834E48&0&0028

Intel(R) E7520 PCI Express Root Port B1 - 3598
Yes SYSTEM
6.3.0.1005 11/17/2004 Intel
e7520.inf Not Available
PCI\VEN_8086&DEV_3598&SUBSYS
_00000000&REV_0C\3&61AAA01&0&28
Broadcom NetXtreme Gigabit Ethernet Yes
NET 7.86.0.0
8/23/2004 Broadcom oem3.inf
Not Available
PCI\VEN_14E4&DEV_1659&SUBSYS
_1659103C&REV_11\4&253DB27D&0&0020

Intel(R) E7525/E7520 PCI Express Root Port B0 -
3597 Yes SYSTEM
6.3.0.1005 11/17/2004 Intel
e7520.inf Not Available
PCI\VEN_8086&DEV_3597&SUBSYS
_00000000&REV_0C\3&61AAA01&0&20
Intel(R) E7525/E7520/E7320 PCI Express Root
Port A0 - 3595 Yes SYSTEM
6.3.0.1005 11/17/2004 Intel
e7520.inf Not Available
PCI\VEN_8086&DEV_3595&SUBSYS
_00000000&REV_0C\3&61AAA01&0&10
Intel(R) E7525/E7520 Error Reporting Registers -
3591 Yes SYSTEM
6.3.0.1005 11/17/2004 Intel
e7520.inf Not Available
PCI\VEN_8086&DEV_3591&SUBSYS
_3208103C&REV_0C\3&61AAA01&0&01

Intel(R) E7520 Memory Controller Hub - 3590
Yes SYSTEM
6.3.0.1005 11/17/2004 Intel
e7520.inf Not Available
PCI\VEN_8086&DEV_3590&SUBSYS
_00000000&REV_0C\3&61AAA01&0&00
5.2.3790.1830
10/1/2002 (Standard system
devices) machine.inf Not Available
ACPI\PNP0A03\2&DABA3FF&0

Intel Processor Yes
PROCESSOR 5.2.3790.1830
10/1/2002 Intel cpu.inf
Not Available
ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_4_3
Intel Processor Yes
PROCESSOR 5.2.3790.1830
10/1/2002 Intel cpu.inf
Not Available
ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_4_2
Intel Processor Yes
PROCESSOR 5.2.3790.1830
10/1/2002 Intel cpu.inf
Not Available
ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_4_1

Intel Processor Yes
PROCESSOR 5.2.3790.1830
10/1/2002 Intel cpu.inf
Not Available
ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_4_0
Microsoft ACPI-Compliant System Yes
SYSTEM 5.2.3790.0
10/1/2002 Microsoft acpi.inf
Not Available ACPI_HAL\PNP0C08\0

ACPI Multiprocessor PC Yes
COMPUTER 5.2.3790.0
10/1/2002 (Standard computers)
hal.inf Not Available
ROOT\ACPI_HAL\0000
Not Available Not Available Not Available Not
Available Not Available Not Available Not
Available Not Available HTREE\ROOT\0

[Environment Variables]

Variable Value User Name
ComSpec %SystemRoot%\system32\cmd.exe
<SYSTEM>
Path
%SystemRoot%\system32;%Syste
mRoot%;%SystemRoot%\System32\Wbem;C:\Pr
ogram 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 4
Stepping 3, GenuineIntel <SYSTEM>
PROCESSOR_REVISION 0403
<SYSTEM>
NUMBER_OF_PROCESSORS 4
<SYSTEM>

```
ClusterLog      C:\WINDOWS\Cluster\cluster.log
                <SYSTEM>
PATHEXT
                .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.J
S;.JSE;.WSF;.WSH        <SYSTEM>
TEMP            %SystemRoot%\TEMP
                <SYSTEM>
TMP             %SystemRoot%\TEMP
                <SYSTEM>
FP_NO_HOST_CHECK        NO
                <SYSTEM>
TEMP            %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\SYSTEM
TMP             %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\SYSTEM
TEMP            %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\LOCAL SERVICE
TMP             %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\LOCAL SERVICE
TEMP            %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\NETWORK SERVICE
TMP             %USERPROFILE%\Local
Settings\Temp           NT
AUTHORITY\NETWORK SERVICE
TEMP            %USERPROFILE%\Local
Settings\Temp           DL25\Administrator

TMP             %USERPROFILE%\Local
Settings\Temp           DL25\Administrator


[Print Jobs]

Document        Size            Owner           Notify
                Status          Time Submitted
                Start Time      Until Time      Elapsed
Time            Pages Printed                   Job ID
                Priority        Parameters      Driver
                Print Processor                 Host
Print Queue     Data Type       Name

[Network Connections]

Local Name      Remote Name                     Type
                Status          User Name

[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   Not Available   Not
Available       Not Available
system          Not Available   4               8
                0               1413120         Not
Available       Not Available   Not Available   Not
Available
smss.exe        Not Available   476             11
                204800          1413120
                3/6/2006 11:55 AM               Not
Available       Not Available   Not Available
csrss.exe       c:\windows\system32\csrss.exe
                556             13              204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.0 (srv03_rtm.030324-
2048)           4.00 KB (4,096 bytes)
                4/12/2005 1:42 PM
winlogon.exe    c:\windows\system32\winlogon.exe
                580             13              204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             497.00
KB (508,928 bytes)      4/14/2005 10:00 AM
services.exe    c:\windows\system32\services.exe
                640             9               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             107.50
KB (110,080 bytes)      4/12/2005 1:43 PM

lsass.exe       c:\windows\system32\lsass.exe
                652             9               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.0 (srv03_rtm.030324-
2048)           13.00 KB (13,312 bytes)
                4/12/2005 1:42 PM
svchost.exe     c:\windows\system32\svchost.exe
                844             8               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM

svchost.exe     c:\windows\system32\svchost.exe
                920             8               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM

svchost.exe     c:\windows\system32\svchost.exe
                1020            8               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM

svchost.exe     c:\windows\system32\svchost.exe
                1100            8               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM

svchost.exe     c:\windows\system32\svchost.exe
                1128            8               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM

spoolsv.exe     c:\windows\system32\spoolsv.exe
                1988            8               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             57.00 KB
(58,368 bytes)          4/14/2005 10:01 AM

msdtc.exe       c:\windows\system32\msdtc.exe
                2020            8               204800
                1413120         3/6/2006 11:55 AM
                2001.12.4720.1830
(srv03_sp1_rtm.050324-1447)             6.00 KB
(6,144 bytes)4/14/2005 10:01 AM
aclient.exe     c:\program
files\altiris\aclient\aclient.exe                356
                8               204800          1413120
                3/6/2006 11:55 AM               6.5.241
                4.75 MB (4,984,908 bytes)
                5/3/2005 8:59 AM
svchost.exe     c:\windows\system32\svchost.exe
                432             8               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM
inetinfo.exe
                c:\windows\system32\inetsrv\inetin
fo.exe          512             8               204800
                1413120         3/6/2006 11:55 AM
                6.0.3790.1830
(srv03_sp1_rtm.050324-1447)             14.00 KB
(14,336 bytes)          4/14/2005 10:02 AM

svchost.exe     c:\windows\system32\svchost.exe
                852             8               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM

rsys.exe        c:\program
files\benchcraft\rsys.exe       984             8
                204800          1413120
                3/6/2006 11:55 AM               Not
Available       9.50 KB (9,728 bytes)
                9/25/2003 6:41 PM

svchost.exe     c:\windows\system32\svchost.exe
                1764            8               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM

svchost.exe     c:\windows\system32\svchost.exe
                1940            8               204800
                1413120         3/6/2006 11:55 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM

wmiprvse.exe
                c:\windows\system32\wbem\wmipr
vse.exe         1948            8               204800
                1413120         3/6/2006 11:56 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             203.00
KB (207,872 bytes)      4/14/2005 10:01 AM

csrss.exe       c:\windows\system32\csrss.exe
                892             13              204800
                1413120         3/6/2006 11:58 AM
                5.2.3790.0 (srv03_rtm.030324-
2048)           4.00 KB (4,096 bytes)
                4/12/2005 1:42 PM
winlogon.exe    c:\windows\system32\winlogon.exe
                1708            13              204800
                1413120         3/6/2006 11:58 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             497.00
KB (508,928 bytes)      4/14/2005 10:00 AM

rdpclip.exe     c:\windows\system32\rdpclip.exe
                2228            8               204800
                1413120         3/6/2006 11:58 AM
                5.2.3790.1830
(srv03_sp1_rtm.050324-1447)             68.00 KB
(69,632 bytes)          4/14/2005 10:01 AM
```

explorer.exe c:\windows\explorer.exe 2348 8 204800 1413120 3/6/2006 11:58 AM 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 1.00 MB (1,050,624 bytes) 4/14/2005 10:01 AM

aclntusr.exe c:\program files\altiris\aclient\aclntusr.exe 2480 8 204800 1413120 3/6/2006 11:58 AM 6, 5, 241 180.00 KB (184,320 bytes) 5/3/2005 8:59 AM

cmd.exe c:\windows\system32\cmd.exe 2600 8 204800 1413120 3/6/2006 11:58 AM 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 379.00 KB (388,096 bytes) 4/12/2005 1:42 PM

logon.scr c:\windows\system32\logon.scr 3160 4 204800 1413120 3/6/2006 12:05 PM 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 497.50 KB (509,440 bytes) 4/14/2005 10:01 AM

w3wp.exe c:\windows\system32\inetsrv\w3wp.exe 1856 8 204800 1413120 3/6/2006 1:16 PM 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 7.00 KB (7,168 bytes)4/14/2005 10:01 AM

dllhost.exe c:\windows\system32\dllhost.exe 3900 8 204800 1413120 3/6/2006 1:19 PM 5.2.3790.0 (srv03_rtm.030324-2048) 5.50 KB (5,632 bytes) 4/12/2005 1:42 PM

wmiprvse.exe c:\windows\system32\wbem\wmiprvse.exe 2944 8 204800 1413120 3/6/2006 4:12 PM 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 203.00 KB (207,872 bytes) 4/14/2005 10:01 AM

[Loaded Modules]

Name Version Size File Date Manufacturer Path

csrss 5.2.3790.0 (srv03_rtm.030324-2048) 4.00 KB (4,096 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\csrss.exe

ntdll 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 748.50 KB (766,464 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\ntdll.dll

csrsrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 33.00 KB (33,792 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\csrsrv.dll

basesrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 51.50 KB (52,736 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\basesrv.dll

winsrv 5.2.3790.2521 (srv03_sp1_gdr.050831-1529) 290.00 KB (296,960 bytes) 8/31/2005 7:18 PM Microsoft Corporation c:\windows\system32\winsrv.dll

gdi32 5.2.3790.2606 (srv03_sp1_gdr.051230-1233) 275.00 KB (281,600 bytes) 12/30/2005 8:12 PM Microsoft Corporation c:\windows\system32\gdi32.dll

advapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 605.50 KB (620,032 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\advapi32.dll

kernel32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1,014.00 KB (1,038,336 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\kernel32.dll

rpcrt4 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 627.00 KB (642,048 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\rpcrt4.dll

user32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 574.50 KB (588,288 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\user32.dll

sxs 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 743.50 KB (761,344 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\sxs.dll

winlogon 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 497.00 KB (508,928 bytes) 4/14/2005 10:00 AM Microsoft Corporation c:\windows\system32\winlogon.exe

crypt32 5.131.3790.1830 (srv03_sp1_rtm.050324-1447) 582.00 KB (595,968 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\crypt32.dll

msasn1 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 56.50 KB (57,856 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\msasn1.dll

msvcrt 7.0.3790.1830 (srv03_sp1_rtm.050324-1447) 340.50 KB (348,672 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\msvcrt.dll

nddeapi 5.2.3790.0 (srv03_rtm.030324-2048) 16.00 KB (16,384 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\nddeapi.dll

profmap 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 22.50 KB (23,040 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\profmap.dll

netapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 341.50 KB (349,696 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\netapi32.dll

userenv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 771.00 KB (789,504 bytes) 4/12/2005 1:43 PM Microsoft Corporation c:\windows\system32\userenv.dll

psapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 20.00 KB (20,480 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\psapi.dll

regapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 55.00 KB (56,320 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\regapi.dll

secur32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 64.00 KB (65,536 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\secur32.dll

setupapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.03 MB (1,079,808 bytes) 4/12/2005 1:43 PM Microsoft Corporation c:\windows\system32\setupapi.dll

version 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 18.00 KB (18,432 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\version.dll

winsta 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 54.50 KB (55,808 bytes) 4/14/2005 10:00 AM Microsoft Corporation c:\windows\system32\winsta.dll

ws2_32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 82.00 KB (83,968 bytes) 4/14/2005 10:00 AM Microsoft Corporation c:\windows\system32\ws2_32.dll

ws2help 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 19.50 KB (19,968 bytes) 4/14/2005 10:00 AM Microsoft Corporation c:\windows\system32\ws2help.dll

msgina 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.16 MB (1,211,904 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\msgina.dll

shsvcs 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 131.50 KB (134,656 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\shsvcs.dll

shlwapi 6.00.3790.2564 (srv03_sp1_gdr.051104-1524) 314.00 KB (321,536 bytes) 11/7/2005 2:19 AM
Microsoft Corporation
c:\windows\system32\shlwapi.dll

sfc 5.2.3790.0 (srv03_rtm.030324-2048) 4.50 KB (4,608 bytes)
4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\sfc.dll

sfc_os 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 138.00 KB (141,312 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\sfc_os.dll

wintrust 5.131.3790.1830 (srv03_sp1_rtm.050324-1447) 162.00 KB (165,888 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\wintrust.dll

imagehlp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 145.50 KB (148,992 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\imagehlp.dll

ole32 5.2.3790.2492 (srv03_sp1_gdr.050720-1521) 1.19 MB (1,245,184 bytes) 7/20/2005 8:24 PM
Microsoft Corporation
c:\windows\system32\ole32.dll

comctl32 6.0 (srv03_sp1_rtm.050324-1447)
1.00 MB (1,051,136 bytes)
3/24/2005 8:41 PM
Microsoft Corporation
c:\windows\winsxs\x86_microsoft.windows.common-controls_6595b64144ccf1df_6.0.3790.1830_x-ww_7ae38ccf\comctl32.dll

winscard 5.2.3790.0 (srv03_rtm.030324-2048) 98.50 KB (100,864 bytes)
4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\winscard.dll

wtsapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 19.00 KB (19,456 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\wtsapi32.dll

winmm 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 172.50 KB (176,640 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\winmm.dll

shell32 6.00.3790.2534 (srv03_sp1_gdr.050922-2352) 7.99 MB (8,379,392 bytes) 9/23/2005 9:50 AM
Microsoft Corporation
c:\windows\system32\shell32.dll

wldap32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 174.50 KB (178,688 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\wldap32.dll

rsaenh 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 183.98 KB (188,392 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\rsaenh.dll

cscdll 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 100.00 KB (102,400 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\cscdll.dll

dimsntfy 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 19.00 KB (19,456 bytes) 4/14/2005 10:03 AM
Microsoft Corporation
c:\windows\system32\dimsntfy.dll

wlnotify 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 94.50 KB (96,768 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\wlnotify.dll

mpr 5.2.3790.0 (srv03_rtm.030324-2048) 56.00 KB (57,344 bytes)
4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\mpr.dll

oleaut32 5.2.3790.1830 543.00 KB (556,032 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\oleaut32.dll

winspool 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 147.00 KB (150,528 bytes) 4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\winspool.drv

comctl32 5.82 (srv03_sp1_rtm.050324-1447)
585.00 KB (599,040 bytes)
3/24/2005 8:41 PM
Microsoft Corporation
c:\windows\winsxs\x86_microsoft.windows.common-controls_6595b64144ccf1df_5.82.3790.1830_x-ww_1b6f474a\comctl32.dll

uxtheme 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 202.00 KB (206,848 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\uxtheme.dll

mprapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 89.00 KB (91,136 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\mprapi.dll

activeds 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 194.00 KB (198,656 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\activeds.dll

adsldpc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 146.00 KB (149,504 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\adsldpc.dll

credui 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 162.00 KB (165,888 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\credui.dll

atl 3.05.2283 83.00 KB (84,992 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\atl.dll

rtutils 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 34.50 KB (35,328 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\rtutils.dll

samlib 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 46.50 KB (47,616 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\samlib.dll

clbcatq 2001.12.4720.2492 (srv03_sp1_gdr.050720-1521) 500.00 KB (512,000 bytes) 7/20/2005 8:24 PM
Microsoft Corporation
c:\windows\system32\clbcatq.dll

comres 2001.12.4720.0 (srv03_rtm.030324-2048) 778.00 KB (796,672 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\comres.dll

wbemprox 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 20.50 KB (20,992 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\wbemprox.dll

wbemcomn 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 221.00 KB (226,304 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\wbemcomn.dll

xpsp2res 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.76 MB (2,897,920 bytes) 4/14/2005 10:03 AM
Microsoft Corporation
c:\windows\system32\xpsp2res.dll

wbemsvc 5.2.3790.0 (srv03_rtm.030324-2048) 42.50 KB (43,520 bytes)
4/13/2005 3:12 PM
Microsoft Corporation
c:\windows\system32\wbem\wbemsvc.dll

fastprox 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 471.00 KB (482,304 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\fastprox.dll

msvcp60 6.05.2144.0 388.00 KB (397,312 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\msvcp60.dll

ntdsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 71.00 KB (72,704 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\ntdsapi.dll

dnsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 153.50 KB (157,184 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\dnsapi.dll

services 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 107.50 KB (110,080 bytes) 4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\services.exe

ncobjapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 36.00 KB (36,864 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\ncobjapi.dll

scesrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 327.00 KB (334,848 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\scesrv.dll

authz 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 66.50 KB (68,096 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\authz.dll

umpnpmgr 5.2.3790.2477 (srv03_sp1_gdr.050629-1534) 135.50 KB (138,752 bytes) 6/29/2005 7:52 PM
Microsoft Corporation
c:\windows\system32\umpnpmgr.dll

eventlog 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 67.50 KB (69,120 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\eventlog.dll

netevent 5.2.3790.0 (srv03_rtm.030324-2048) 224.00 KB (229,376 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\netevent.dll

cabinet 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 81.50 KB (83,456 bytes) 3/24/2005 7:35 PM
Microsoft Corporation
c:\windows\system32\cabinet.dll

lsass 5.2.3790.0 (srv03_rtm.030324-2048) 13.00 KB (13,312 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\lsass.exe

lsasrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 803.00 KB (822,272 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\lsasrv.dll

samsrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 450.50 KB (461,312 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\samsrv.dll

cryptdll 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 32.00 KB (32,768 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\cryptdll.dll

msprivs 5.2.3790.0 (srv03_rtm.030324-2048) 46.50 KB (47,616 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\msprivs.dll

kerberos 5.2.3790.2464 (srv03_sp1_gdr.050613-1636) 341.50 KB (349,696 bytes) 6/14/2005 12:10 PM
Microsoft Corporation
c:\windows\system32\kerberos.dll

msv1_0 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 141.00 KB (144,384 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\msv1_0.dll

iphlpapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 92.50 KB (94,720 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\iphlpapi.dll

netlogon 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 409.50 KB (419,328 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\netlogon.dll

w32time 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 222.00 KB (227,328 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\w32time.dll

schannel 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 141.00 KB (144,384 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\schannel.dll

wdigest 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 74.00 KB (75,776 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wdigest.dll

rassfm 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 23.00 KB (23,552 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\rassfm.dll

kdcsvc 5.2.3790.2464 (srv03_sp1_gdr.050613-1636) 214.50 KB (219,648 bytes) 6/14/2005 12:10 PM
Microsoft Corporation
c:\windows\system32\kdcsvc.dll

ntdsa 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.45 MB (1,516,032 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\ntdsa.dll

esent 5.2.3790.2555 (srv03_sp1_gdr.051024-1524) 1,022.00 KB (1,046,528 bytes) 2/1/2006 11:06 AM
Microsoft Corporation
c:\windows\system32\esent.dll

ntdsatq 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 29.50 KB (30,208 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\ntdsatq.dll

mswsock 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 250.50 KB (256,512 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\mswsock.dll

scecli 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 186.50 KB (190,976 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\scecli.dll

ws03res 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 793.50 KB (812,544 bytes) 4/14/2005 10:03 AM
Microsoft Corporation
c:\windows\system32\ws03res.dll

hnetcfg 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 343.50 KB (351,744 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\hnetcfg.dll

wshtcpip 5.2.3790.0 (srv03_rtm.030324-2048) 18.00 KB (18,432 bytes) 4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\wshtcpip.dll

ipsecsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 180.50 KB (184,832 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\ipsecsvc.dll

oakley 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 264.00 KB (270,336 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\oakley.dll

winipsec 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 35.50 KB (36,352 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\winipsec.dll

pstorsvc 5.2.3790.0 (srv03_rtm.030324-2048) 24.00 KB (24,576 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\pstorsvc.dll

psbase 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 84.00 KB (86,016 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\psbase.dll

dssenh 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 139.98 KB (143,336 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\dssenh.dll

wlbsctrl 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 82.00 KB (83,968 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\wlbsctrl.dll

w3ssl 6.0.3790.0 (srv03_rtm.030324-2048) 15.00 KB (15,360 bytes) 4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\w3ssl.dll

strmfilt 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 84.00 KB (86,016 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\strmfilt.dll

httpapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 24.00 KB (24,576 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\httpapi.dll

svchost 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 14.00 KB (14,336 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\svchost.exe

rpcss 5.2.3790.2492 (srv03_sp1_gdr.050720-1521) 408.00 KB (417,792 bytes) 7/20/2005 8:24 PM
Microsoft Corporation
c:\windows\system32\rpcss.dll

dhcpcsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 113.50 KB (116,224 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\dhcpcsvc.dll

dnsrslvr 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 44.50 KB (45,568 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\dnsrslvr.dll

netman 5.2.3790.2516 (srv03_sp1_gdr.050824-1616) 258.50 KB (264,704 bytes) 8/25/2005 5:12 PM
Microsoft Corporation
c:\windows\system32\netman.dll

netshell 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.73 MB (1,812,992 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\netshell.dll

clusapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 60.00 KB (61,440 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\clusapi.dll

rasapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 239.50 KB (245,248 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\rasapi32.dll

rasman 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 61.50 KB (62,976 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\rasman.dll

tapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 179.50 KB (183,808 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\tapi32.dll

wininet 6.00.3790.2564 (srv03_sp1_gdr.051104-1524) 647.00 KB (662,528 bytes) 11/7/2005 2:19 AM
Microsoft Corporation
c:\windows\system32\wininet.dll

wzcsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 41.00 KB (41,984 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\wzcsapi.dll

wzcsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 364.50 KB (373,248 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\wzcsvc.dll

wmi 5.2.3790.0 (srv03_rtm.030324-2048) 6.50 KB (6,656 bytes) 4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\wmi.dll

ntmarta 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 120.50 KB (123,392 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\ntmarta.dll

lmhsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 19.50 KB (19,968 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\lmhsvc.dll

winrnr 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 17.00 KB (17,408 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\winrnr.dll

rasadhlp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 7.50 KB (7,680 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\rasadhlp.dll

winhttp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 353.00 KB (361,472 bytes) 3/24/2005 8:41 PM
Microsoft Corporation
c:\windows\winsxs\x86_microsoft.windows.winhttp_6595b64144ccf1df_5.1.3790.1830_x-ww_74150efb\winhttp.dll

rastls 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 180.00 KB (184,320 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\rastls.dll

cryptui 5.131.3790.1830 (srv03_sp1_rtm.050324-1447) 496.50 KB (508,416 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\cryptui.dll

raschap 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 119.50 KB (122,368 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\raschap.dll

schedsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 197.50 KB (202,240 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\schedsvc.dll

msidle 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 6.50 KB (6,656 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\msidle.dll

audiosrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 40.50 KB (41,472 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\audiosrv.dll

wiarpc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 32.50 KB (33,280 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wiarpc.dll

wkssvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 130.00 KB (133,120 bytes) 4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\wkssvc.dll

aelupsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 26.00 KB (26,624 bytes) 4/14/2005 10:03 AM
Microsoft Corporation
c:\windows\system32\aelupsvc.dll

apphelp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 146.50 KB (150,016 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\apphelp.dll

cryptsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 55.50 KB (56,832 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\cryptsvc.dll

certcli 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 227.00 KB (232,448 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\certcli.dll

vssapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 548.00 KB (561,152 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\vssapi.dll

dmserver 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 25.50 KB (26,112 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\dmserver.dll

es 2001.12.4720.2492 (srv03_sp1_gdr.050720-1521) 233.00 KB (238,592 bytes) 7/20/2005 8:24 PM
Microsoft Corporation
c:\windows\system32\es.dll

pchsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 39.00 KB (39,936 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\pchealth\helpctr\binaries\pchsvc.dll

srvsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 93.50 KB (95,744 bytes) 4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\srvsvc.dll

seclogon 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 18.50 KB (18,944 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\seclogon.dll

sens 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 36.50 KB (37,376 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\sens.dll

trkwks 5.2.3790.0 (srv03_rtm.030324-2048) 85.00 KB (87,040 bytes) 4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\trkwks.dll

wmisvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 140.00 KB (143,360 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\wmisvc.dll

wuauserv 5.7.3790.1830 (srv03_sp1_rtm.050324-1447) 8.00 KB (8,192 bytes)4/14/2005 10:03 AM
Microsoft Corporation
c:\windows\system32\wuauserv.dll
wuaueng 5.8.0.2469 built by: lab01_n(wmbla) 1.28 MB (1,343,768 bytes) 4/14/2005 10:03 AM
Microsoft Corporation
c:\windows\system32\wuaueng.dll

advpack 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 98.00 KB (100,352 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\advpack.dll

shfolder 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 24.50 KB (25,088 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\shfolder.dll

mspatcha 5.2.3790.0 (srv03_rtm.030324-2048) 29.00 KB (29,696 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\mspatcha.dll

comsvcs 2001.12.4720.2517 (srv03_sp1_gdr.050825-1634) 1.19 MB (1,247,744 bytes) 8/26/2005 3:18 PM
Microsoft Corporation
c:\windows\system32\comsvcs.dll

browser 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 76.50 KB (78,336 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\browser.dll

netrap 5.2.3790.0 (srv03_rtm.030324-2048) 11.50 KB (11,776 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\netrap.dll

wbemcore 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 497.50 KB (509,440 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\wbemcore.dll
esscli 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 250.00 KB (256,000 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\esscli.dll
wmiutils 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 93.50 KB (95,744 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\wmiutils.dll
repdrvfs 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 172.50 KB (176,640 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\repdrvfs.dll

wmiprvsd 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 404.00 KB (413,696 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\wmiprvsd.dll
wbemess 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 271.50 KB (278,016 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\wbemess.dll
ncprov 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 46.50 KB (47,616 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\ncprov.dll
ntlsapi 5.2.3790.0 (srv03_rtm.030324-2048) 8.00 KB (8,192 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\ntlsapi.dll

rasdlg 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 663.00 KB (678,912 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\rasdlg.dll

spoolsv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 57.00 KB (58,368 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\spoolsv.exe

spoolss 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 85.00 KB (87,040 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\spoolss.dll

localspl 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 339.00 KB (347,136 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\localspl.dll

cnbjmon 5.2.3790.1224 (dnsrv(skatari).040514-1058) 46.50 KB (47,616 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\cnbjmon.dll

pjlmon 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 15.00 KB (15,360 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\pjlmon.dll

tcpmon 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 47.00 KB (48,128 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\tcpmon.dll

wsnmp32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 43.00 KB (44,032 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\wsnmp32.dll

tcpmib 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 17.50 KB (17,920 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\tcpmib.dll

wsock32 5.2.3790.0 (srv03_rtm.030324-2048) 22.00 KB (22,528 bytes)
4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\wsock32.dll

mgmtapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 15.50 KB (15,872 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\mgmtapi.dll

snmpapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 19.50 KB (19,968 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\snmpapi.dll

usbmon 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 17.00 KB (17,408 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\usbmon.dll

wshqos 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 24.00 KB (24,576 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\wshqos.dll

win32spl 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 100.50 KB (102,912 bytes) 4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\win32spl.dll

inetpp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 75.00 KB (76,800 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\inetpp.dll

icmp 5.2.3790.0 (srv03_rtm.030324-2048) 4.50 KB (4,608 bytes)
4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\icmp.dll

msdtc 2001.12.4720.1830 (srv03_sp1_rtm.050324-1447) 6.00 KB (6,144 bytes)4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\msdtc.exe

msdtctm 2001.12.4720.2517 (srv03_sp1_gdr.050825-1634) 973.00 KB (996,352 bytes) 8/26/2005 3:18 PM
Microsoft Corporation
c:\windows\system32\msdtctm.dll

msdtclog 2001.12.4720.1830 (srv03_sp1_rtm.050324-1447) 73.50 KB (75,264 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\msdtclog.dll

msdtcprx 2001.12.4720.2492 (srv03_sp1_gdr.050720-1521) 455.50 KB (466,432 bytes) 7/20/2005 8:24 PM
Microsoft Corporation
c:\windows\system32\msdtcprx.dll

mtxclu 2001.12.4720.2492 (srv03_sp1_gdr.050720-1521) 77.00 KB (78,848 bytes) 7/20/2005 8:24 PM
Microsoft Corporation
c:\windows\system32\mtxclu.dll

xolehlp 2001.12.4720.1830 (srv03_sp1_rtm.050324-1447) 10.50 KB (10,752 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\xolehlp.dll

resutils 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 63.50 KB (65,024 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\resutils.dll

mtxoci 2001.12.4720.2492 (srv03_sp1_gdr.050720-1521) 108.50 KB (111,104 bytes) 7/20/2005 8:24 PM
Microsoft Corporation
c:\windows\system32\mtxoci.dll

aclient 6.5.241 4.75 MB (4,984,908 bytes) 5/3/2005 8:59 AM Altiris, Inc. c:\program files\altiris\aclient\aclient.exe

comdlg32 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 274.50 KB (281,088 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\comdlg32.dll

riched32 5.2.3790.0 (srv03_rtm.030324-2048) 3.50 KB (3,584 bytes)
4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\riched32.dll

riched20 5.31.23.1224439.00 KB (449,536 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\riched20.dll

ersvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 24.00 KB (24,576 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\ersvc.dll

inetinfo 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 14.00 KB (14,336 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\inetsrv\inetinfo.exe

iisutil 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 164.00 KB (167,936 bytes) 4/14/2005 10:03 AM
Microsoft Corporation
c:\windows\system32\inetsrv\iisutil.dll

rpcref 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 4.00 KB (4,096 bytes)4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\inetsrv\rpcref.dll

iisrtl 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 138.50 KB (141,824 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\iisrtl.dll

iisadmin 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 21.00 KB (21,504 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\inetsrv\iisadmin.dll

coadmin 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 62.50 KB (64,000 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\inetsrv\coadmin.dll

admwprox 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 47.00 KB (48,128 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\admwprox.dll

iiscfg 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 1.08 MB (1,133,056 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\inetsrv\iiscfg.dll

metadata 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 229.00 KB (234,496 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\inetsrv\metadata.dll

msxml3 8.70.1104.0 1.06 MB (1,107,456 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\msxml3.dll

svcext 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 43.50 KB (44,544 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\inetsrv\svcext.dll

security 5.2.3790.0 (srv03_rtm.030324-2048) 5.50 KB (5,632 bytes)
4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\security.dll

iismap 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 58.50 KB (59,904 bytes) 4/14/2005 10:03 AM
Microsoft Corporation
c:\windows\system32\iismap.dll

wamreg 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 54.50 KB (55,808 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\inetsrv\wamreg.dll

regsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 68.50 KB (70,144 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\regsvc.dll

rsys Not Available 9.50 KB (9,728 bytes) 9/25/2003 6:41 PM Not Available c:\program files\benchcraft\rsys.exe
msvcr70 7.00.9466.0 336.00 KB (344,064 bytes) 1/5/2002 3:37 AM Microsoft Corporation c:\program files\benchcraft\msvcr70.dll
iisw3adm 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 211.00 KB (216,064 bytes) 4/14/2005 10:02 AM Microsoft Corporation c:\windows\system32\inetsrv\iisw3adm.dll
w3cache 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 19.00 KB (19,456 bytes) 4/14/2005 10:02 AM Microsoft Corporation c:\windows\system32\inetsrv\w3cache.dll
w3tp 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 13.00 KB (13,312 bytes) 4/14/2005 10:02 AM Microsoft Corporation c:\windows\system32\inetsrv\w3tp.dll
lonsint 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 13.00 KB (13,312 bytes) 4/14/2005 10:02 AM Microsoft Corporation c:\windows\system32\inetsrv\lonsint.dll
termsrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 239.00 KB (244,736 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\termsrv.dll

icaapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 12.50 KB (12,800 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\icaapi.dll

mstlsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 116.00 KB (118,784 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\mstlsapi.dll

rdpwsx 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 101.63 KB (104,072 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\rdpwsx.dll

wmiprvse 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 203.00 KB (207,872 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\wbem\wmiprvse.exe
faultrep 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 84.50 KB (86,528 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\faultrep.dll

wmiprov 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 141.00 KB (144,384 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\wbem\wmiprov.dll

rdpsnd 5.2.3790.0 (srv03_rtm.030324-2048) 18.00 KB (18,432 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\rdpsnd.dll
scredir 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 28.00 KB (28,672 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\scredir.dll

cscui 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 319.50 KB (327,168 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\cscui.dll

msacm32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 22.00 KB (22,528 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\msacm32.drv

msacm32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 69.50 KB (71,168 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\msacm32.dll

imaadp32 5.2.3790.0 (srv03_rtm.030324-2048) 15.50 KB (15,872 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\imaadp32.acm
msadp32 5.2.3790.0 (srv03_rtm.030324-2048) 14.50 KB (14,848 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\msadp32.acm
msg711 5.2.3790.0 (srv03_rtm.030324-2048) 10.00 KB (10,240 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\msg711.acm

msgsm32 5.2.3790.0 (srv03_rtm.030324-2048) 20.50 KB (20,992 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\msgsm32.acm
tssoft32 1.01 9.50 KB (9,728 bytes) 4/12/2005 1:43 PM DSP GROUP, INC. c:\windows\system32\tssoft32.acm

tsd32 1.03 16.50 KB (16,896 bytes) 4/12/2005 1:43 PM DSP GROUP, INC. c:\windows\system32\tsd32.dll

msg723 5.2.3790.1830 120.00 KB (122,880 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\msg723.acm

msaud32 8.00.00.4487288.00 KB (294,912 bytes) 4/12/2005 1:43 PM Microsoft Corporation c:\windows\system32\msaud32.acm

sl_anet 3.02 84.00 KB (86,016 bytes) 4/12/2005 1:43 PM Sipro Lab Telecom Inc. c:\windows\system32\sl_anet.acm
l3codeca 1, 9, 0, 0305 284.00 KB (290,816 bytes) 4/12/2005 1:43 PM Fraunhofer Institut Integrierte Schaltungen IIS c:\windows\system32\l3codeca.acm

printui 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 563.00 KB (576,512 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\printui.dll

cfgmgr32 5.2.3790.0 (srv03_rtm.030324-2048) 17.50 KB (17,920 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\cfgmgr32.dll

rdpclip 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 68.00 KB (69,632 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\rdpclip.exe

urlmon 6.00.3790.2564 (srv03_sp1_gdr.051104-1524) 675.00 KB (691,200 bytes) 11/7/2005 2:19 AM Microsoft Corporation c:\windows\system32\urlmon.dll

explorer 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 1.00 MB (1,050,624 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\explorer.exe
browseui 6.00.3790.2564 (srv03_sp1_gdr.051104-1524) 1,012.00 KB (1,036,288 bytes) 11/7/2005 2:19 AM Microsoft Corporation c:\windows\system32\browseui.dll

shdocvw 6.00.3790.2580 (srv03_sp1_gdr.051130-1605) 1.44 MB (1,513,472 bytes) 12/1/2005 7:13 AM Microsoft Corporation c:\windows\system32\shdocvw.dll

themeui 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 377.50 KB (386,560 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\themeui.dll

msimg32 5.2.3790.0 (srv03_rtm.030324-2048) 4.50 KB (4,608 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\msimg32.dll

actxprxy 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 96.50 KB (98,816 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\actxprxy.dll

linkinfo 5.2.3790.2521 (srv03_sp1_gdr.050831-1529) 20.00 KB (20,480 bytes) 8/31/2005 7:18 PM
Microsoft Corporation
c:\windows\system32\linkinfo.dll

ntshrui 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 140.00 KB (143,360 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\ntshrui.dll

webcheck 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 272.50 KB (279,040 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\webcheck.dll

stobject 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 120.50 KB (123,392 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\stobject.dll

batmeter 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 31.50 KB (32,256 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\batmeter.dll

powrprof 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 16.50 KB (16,896 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\powrprof.dll

drprov 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 14.00 KB (14,336 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\drprov.dll

ntlanman 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 43.50 KB (44,544 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\ntlanman.dll

netui0 5.2.3790.0 (srv03_rtm.030324-2048) 75.50 KB (77,312 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\netui0.dll

netui1 5.2.3790.0 (srv03_rtm.030324-2048) 184.00 KB (188,416 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\netui1.dll

davclnt 5.2.3790.0 (srv03_rtm.030324-2048) 23.50 KB (24,064 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\davclnt.dll

aclntusr 6, 5, 241 180.00 KB (184,320 bytes) 5/3/2005 8:59 AM
c:\program files\altiris\aclient\aclntusr.exe

cmd 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 379.00 KB (388,096 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\cmd.exe

logon 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 497.50 KB (509,440 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\logon.scr

w3wp 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 7.00 KB (7,168 bytes)4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\inetsrv\w3wp.exe

w3core 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 340.50 KB (348,672 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\inetsrv\w3core.dll

w3comlog 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 10.50 KB (10,752 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\inetsrv\w3comlog.dll

w3dt 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 38.50 KB (39,424 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\inetsrv\w3dt.dll

iisres 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 120.00 KB (122,880 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\inetsrv\iisres.dll

aspnet_filter 2.0.50727.42 (RTM.050727-4200) 10.50 KB (10,752 bytes) 9/23/2005 8:28 AM
Microsoft Corporation
c:\windows\microsoft.net\framework\v2.0.50727\aspnet_filter.dll

msvcr80 8.00.50727.42 612.00 KB (626,688 bytes) 9/23/2005 8:29 AM
Microsoft Corporation
c:\windows\winsxs\x86_microsoft.vc80.crt_1fc8b3b9a1e18e3b_8.0.50727.42_x-ww_0de06acd\msvcr80.dll

w3isapi 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 61.00 KB (62,464 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\inetsrv\w3isapi.dll

gzip 6.0.3790.1830 (srv03_sp1_rtm.050324-1447) 25.00 KB (25,600 bytes) 4/14/2005 10:02 AM
Microsoft Corporation
c:\windows\system32\inetsrv\gzip.dll

"\\?\c:\inetpub\wwwroot\tpcc.dll"

"\\?\c:\inetpub\wwwroot\tpcc.dll"

msvcr70 7.00.9466.0 336.00 KB (344,064 bytes) 4/14/2005 12:11 PM
Microsoft Corporation
c:\windows\system32\msvcr70.dll

tpcc_com Not Available 10.50 KB (10,752 bytes) 4/27/2005 11:07 AM Not Available c:\inetpub\wwwroot\tpcc_com.dll

tpcc_odbc Not Available 20.00 KB (20,480 bytes) 5/31/2005 9:04 PM Not Available c:\inetpub\wwwroot\tpcc_odbc.dll

odbc32 3.526.1830.0 (srv03_sp1_rtm.050324-1447) 240.00 KB (245,760 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\odbc32.dll

odbcint 3.526.1830.0 (srv03_sp1_rtm.050324-1447) 92.00 KB (94,208 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\odbcint.dll

sqlsrv32 2000.086.1830.00 (srv03_sp1_rtm.050324-1447) 436.00 KB (446,464 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\sqlsrv32.dll

sqlunirl 2000.080.0728.00 176.56 KB (180,800 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\sqlunirl.dll

sqlsrv32 2000.086.1830.00 (srv03_sp1_rtm.050324-1447) 88.00 KB (90,112 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\sqlsrv32.rll

odbccp32 3.526.1830.0 (srv03_sp1_rtm.050324-1447) 100.00 KB (102,400 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\odbccp32.dll

dbnetlib 2000.086.1830 (srv03_sp1_rtm.050324-1447) 112.00 KB (114,688 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\dbnetlib.dll

tpcc_com_all 1, 0, 0, 1 104.00 KB (106,496 bytes) 4/27/2005 11:07 AM
c:\inetpub\wwwroot\tpcc_com_all.dll

dllhost 5.2.3790.0 (srv03_rtm.030324-2048) 5.50 KB (5,632 bytes) 4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\dllhost.exe

txflog 2001.12.4720.2492 (srv03_sp1_gdr.050720-1521) 96.50 KB (98,816 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\txflog.dll

catsrv 2001.12.4720.2492 (srv03_sp1_gdr.050720-1521) 268.00 KB (274,432 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\catsrv.dll

clbcatex 2001.12.4720.2492 (srv03_sp1_gdr.050720-1521) 102.50 KB (104,960 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\clbcatex.dll

cimwin32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.31 MB (1,372,160 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\cimwin32.dll

framedyn 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 174.50 KB (178,688 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\framedyn.dll

licwmi 5.2.3790.0 (srv03_rtm.030324-2048) 58.50 KB (59,904 bytes)
4/13/2005 3:12 PM
Microsoft Corporation
c:\windows\system32\licwmi.dll

licdll 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 439.00 KB (449,536 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\licdll.dll

ntevt 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 230.50 KB (236,032 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\ntevt.dll

provthrd 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 188.00 KB (192,512 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\wbem\provthrd.dll

msvcirt 7.0.3790.0 (srv03_rtm.030324-2048) 50.00 KB (51,200 bytes)
4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\msvcirt.dll

msinfo 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 376.00 KB (385,024 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\pchealth\helpctr\binaries\msinfo.dll

mfc42u 6.06.8063.0 1.11 MB (1,163,776 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\mfc42u.dll

cryptnet 5.131.3790.1830 (srv03_sp1_rtm.050324-1447) 61.00 KB (62,464 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\cryptnet.dll

sensapi 5.2.3790.0 (srv03_rtm.030324-2048) 6.00 KB (6,144 bytes)
4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\sensapi.dll

[Services]

Display Name Name State
Start Mode Service Type Path
Error Control Start Name Tag ID

Altiris Client Service AClient Running
Auto Own Process
c:\program files\altiris\aclient\aclient.exe -service Normal
LocalSystem 0

Application Experience Lookup Service AeLookupSvc Running Auto
Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Alerter Alerter Stopped Disabled
Share Process
c:\windows\system32\svchost.exe -k localservice Normal
NT AUTHORITY\LocalService 0

Application Layer Gateway Service ALG Stopped Manual
Own Process c:\windows\system32\alg.exe
Normal NT AUTHORITY\LocalService 0

Application Management AppMgmt Stopped Manual
Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

ASP.NET State Service aspnet_state Stopped Manual
Own Process
c:\windows\microsoft.net\framework\v2.0.50727\aspnet_state.exe Normal
NT AUTHORITY\NetworkService 0

Windows Audio AudioSrv Running Auto
Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Background Intelligent Transfer Service BITS Stopped Manual
Share Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0

Computer Browser Browser Running Auto
Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Indexing Service CiSvc Stopped Disabled
Share Process
c:\windows\system32\cisvc.exe Normal LocalSystem 0

ClipBook ClipSrv Stopped Disabled
Own Process
c:\windows\system32\clipsrv.exe Normal LocalSystem 0

.NET Runtime Optimization Service v2.0.50727_X86
clr_optimization_v2.0.50727_32 Stopped Manual Own Process
c:\windows\microsoft.net\framework\v2.0.50727\mscorsvw.exe Ignore
LocalSystem 0

COM+ System Application COMSysApp Running Manual
Own Process
c:\windows\system32\dllhost.exe /processid:{02d4b3f1-fd88-11d1-960d-00805fc79235} Normal
LocalSystem 0

Cryptographic Services CryptSvc Running Auto
Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

DCOM Server Process Launcher DcomLaunch Running Auto
Share Process
c:\windows\system32\svchost.exe -k dcomlaunch Normal
LocalSystem 0

Distributed File System Dfs Stopped Manual
Own Process
c:\windows\system32\dfssvc.exe Normal LocalSystem 0

DHCP Client Dhcp Running Auto
Share Process
c:\windows\system32\svchost.exe -k networkservice Normal NT
AUTHORITY\NetworkService 0

Logical Disk Manager Administrative Service dmadmin Stopped Manual
Share Process
c:\windows\system32\dmadmin.exe /com Normal LocalSystem 0

Logical Disk Manager dmserver Running Auto
Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

DNS Client Dnscache Running Auto
Share Process
c:\windows\system32\svchost.exe -k networkservice Normal NT
AUTHORITY\NetworkService 0

Error Reporting Service ERSvc Running Auto
Share Process
c:\windows\system32\svchost.exe -k winerr Ignore LocalSystem 0

Event Log Eventlog Running Auto
Share Process
c:\windows\system32\services.exe Normal LocalSystem 0

COM+ Event System EventSystem Running Auto
Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Help and Support helpsvc Running Auto
Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

Human Interface Device Access HidServ Stopped Disabled
Share Process c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0

HTTP SSL HTTPFilter Running Manual
Share Process
c:\windows\system32\lsass.exe Normal LocalSystem 0

IIS Admin Service IISADMIN Running Auto
Share Process
c:\windows\system32\inetsrv\inetinfo.exe Normal LocalSystem 0

```
IMAPI CD-Burning COM Service
        ImapiService Stopped    Disabled
        Own Process
        c:\windows\system32\imapi.exe
        Normal  LocalSystem 0

Intersite Messaging     IsmServ Stopped
        Disabled        Own Process
        c:\windows\system32\ismserv.exe
        Normal  LocalSystem 0

Kerberos Key Distribution Center        kdc
        Stopped Disabled        Share
Process c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

Server  lanmanserverRunning     Auto
        Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Workstation     lanmanworkstation       Running
        Auto    Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

License Logging         LicenseService
        Stopped Disabled        Own
Process c:\windows\system32\llssrv.exe
        Normal  NT
AUTHORITY\NetworkService        0

TCP/IP NetBIOS Helper   LmHosts Running
        Auto    Share Process
        c:\windows\system32\svchost.exe -
k localservice  Normal  NT
AUTHORITY\LocalService  0
Messenger       Messenger       Stopped Disabled
        Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

NetMeeting Remote Desktop Sharing
        mnmsrvc Stopped Disabled
        Own Process
        c:\windows\system32\mnmsrvc.exe
        Normal  LocalSystem 0

Distributed Transaction Coordinator     MSDTC
        Running Auto    Own
Process c:\windows\system32\msdtc.exe
        Normal  NT
AUTHORITY\NetworkService        1

Windows Installer       MSIServer       Stopped
        Manual  Share Process
        c:\windows\system32\msiexec.exe
/v      Normal  LocalSystem 0

Network DDE     NetDDE  Stopped Disabled
        Share Process
        c:\windows\system32\netdde.exe
        Normal  LocalSystem 0

Network DDE DSDM        NetDDEdsdm Stopped
        Disabled        Share Process
        c:\windows\system32\netdde.exe
        Normal  LocalSystem 0

Net Logon       Netlogon        Stopped Manual
        Share Process
        c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

Network Connections     Netman  Running
        Manual  Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0
Network Location Awareness (NLA)        Nla
        Running Manual  Share
Process c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

File Replication        NtFrs   Stopped
        Manual  Own Process
        c:\windows\system32\ntfrs.exe
        Ignore  LocalSystem 0

NT LM Security Support Provider         NtLmSsp
        Stopped Manual  Share
Process c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

Removable Storage       NtmsSvc Stopped
        Manual  Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Plug and PlayPlugPlay   Running Auto
        Share Process
        c:\windows\system32\services.exe
        Normal  LocalSystem 0

IPSEC Services  PolicyAgent     Running
        Auto    Share Process
        c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

Protected Storage       ProtectedStorage
        Running Auto    Share
Process c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

Remote Access Auto Connection Manager
        RasAuto Stopped Manual
        Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Remote Access Connection Manager        RasMan
        Stopped Manual  Share
Process c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Remote Desktop Help Session Manager
        RDSessMgr       Stopped Manual
        Own Process
        c:\windows\system32\sessmgr.exe
        Normal  LocalSystem 0

Routing and Remote Access
        RemoteAccess    Stopped
        Disabled        Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Remote Registry         RemoteRegistry
        Running Auto    Share
Process c:\windows\system32\svchost.exe -
k regsvc        Normal  NT
AUTHORITY\LocalService  0
Remote Command Service  RMSYS   Running
        Auto    Own Process
        "c:\program
files\benchcraft\rsys.exe"      Normal
        .\Administrator 0

Remote Procedure Call (RPC) Locator
        RpcLocator      Stopped Manual
        Own Process
        c:\windows\system32\locator.exe
        Normal  NT
AUTHORITY\NetworkService        0
Remote Procedure Call (RPC)     RpcSs
        Running Auto    Share
Process c:\windows\system32\svchost.exe -
k rpcss         Normal  NT
Authority\NetworkService        0
Resultant Set of Policy Provider
        RSoPProv        Stopped Manual
        Share Process
        c:\windows\system32\rsopprov.exe
        Normal  LocalSystem 0

Special Administration Console Helper   sacsvr
        Stopped Manual  Share
Process c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Security Accounts ManagerSamSs  Running
        Auto    Share Process
        c:\windows\system32\lsass.exe
        Normal  LocalSystem 0

Smart Card      SCardSvr        Stopped Manual
        Share Process
        c:\windows\system32\scardsvr.exe
        Ignore  NT
AUTHORITY\LocalService  0

Task Scheduler  Schedule        Running
        Auto    Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Secondary Logon         seclogon        Running
        Auto    Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Ignore  LocalSystem 0

System Event Notification       SENS    Running
        Auto    Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Windows Firewall/Internet Connection Sharing
(ICS)   SharedAccess    Stopped
        Disabled        Share Process
        c:\windows\system32\svchost.exe -
k netsvcs       Normal  LocalSystem 0

Shell Hardware Detection        ShellHWDetection
        Running Auto    Share
Process c:\windows\system32\svchost.exe -
k netsvcs       Ignore  LocalSystem 0

Print Spooler Spooler   Running Auto
        Own Process
        c:\windows\system32\spoolsv.exe
        Normal  LocalSystem 0

Windows Image Acquisition (WIA)         stisvc
        Stopped Disabled        Share
Process c:\windows\system32\svchost.exe -
k imgsvc        Normal  NT
AUTHORITY\LocalService  0
```

```
Microsoft Software Shadow Copy Provider
                swprv           Stopped         Manual
Own Process
c:\windows\system32\svchost.exe -
k swprv         Normal          LocalSystem     0

Performance Logs and Alerts
                SysmonLog       Stopped         Manual
Own Process
c:\windows\system32\smlogsvc.exe
                Normal          NT
Authority\NetworkService        0
Telephony       TapiSrv         Stopped         Manual
Share Process
c:\windows\system32\svchost.exe -
k tapisrv       Normal          LocalSystem     0

Terminal Services               TermService     Running
                Manual          Share Process
c:\windows\system32\svchost.exe -
k termsvcs      Normal          LocalSystem     0

Themes          Themes          Stopped         Disabled
Share Process
c:\windows\system32\svchost.exe -
k netsvcs       Normal          LocalSystem     0

Telnet          TlntSvr         Stopped         Disabled
Own Process
c:\windows\system32\tlntsvr.exe
                Normal          NT
AUTHORITY\LocalService          0
Distributed Link Tracking Server                TrkSvr
                Stopped         Disabled        Share
Process         c:\windows\system32\svchost.exe -
k netsvcs       Normal          LocalSystem     0

Distributed Link Tracking Client                TrkWks
                Running         Auto            Share
Process         c:\windows\system32\svchost.exe -
k netsvcs       Normal          LocalSystem     0

Terminal Services Session Directory             Tssdis
                Stopped         Disabled        Own
Process         c:\windows\system32\tssdis.exe
                Normal          LocalSystem     0

Windows User Mode Driver Framework              UMWdf
                Stopped         Manual          Own
Process         c:\windows\system32\wdfmgr.exe
                Normal          NT
AUTHORITY\LocalService          0
Upload Manager                  uploadmgr       Stopped
                Manual          Share Process
c:\windows\system32\svchost.exe -
k netsvcs       Normal          LocalSystem     0

Uninterruptible Power Supply                    UPS
                Stopped         Manual          Own
Process         c:\windows\system32\ups.exe
                Normal          NT
AUTHORITY\LocalService          0
Virtual Disk Service            vds             Stopped
                Manual          Own Process
c:\windows\system32\vds.exe
                Normal          LocalSystem     0

Volume Shadow Copy              VSS             Stopped
                Manual          Own Process
c:\windows\system32\vssvc.exe
                Normal          LocalSystem     0

Windows Time                    W32Time         Running
                Auto            Share Process
c:\windows\system32\svchost.exe -
k localservice  Normal          NT
AUTHORITY\LocalService          0
World Wide Web Publishing Service               W3SVC
                Running         Auto            Share
Process         c:\windows\system32\svchost.exe -
k iissvcs       Normal          LocalSystem     0

WebClient       WebClient       Stopped         Disabled
                Share Process
c:\windows\system32\svchost.exe -
k localservice  Normal          NT
AUTHORITY\LocalService          0
WinHTTP Web Proxy Auto-Discovery Service
                WinHttpAutoProxySvc     Stopped
Manual          Share Process
c:\windows\system32\svchost.exe -
k localservice  Normal          NT
AUTHORITY\LocalService          0
Windows Management Instrumentation
                winmgmt         Running         Auto
Share Process
c:\windows\system32\svchost.exe -
k netsvcs       Ignore          LocalSystem     0

Portable Media Serial Number Service
                WmdmPmSN        Stopped         Manual
Share Process
c:\windows\system32\svchost.exe -
k netsvcs       Normal          LocalSystem     0

Windows Management Instrumentation Driver
Extensions      Wmi             Stopped         Manual
Share Process
c:\windows\system32\svchost.exe -
k netsvcs       Normal          LocalSystem     0

WMI Performance Adapter         WmiApSrv        Stopped
                Manual          Own Process
c:\windows\system32\wbem\wmiap
srv.exe         Normal          LocalSystem     0

Automatic Updates               wuauserv        Running
                Auto            Share Process
c:\windows\system32\svchost.exe -
k netsvcs       Normal          LocalSystem     0

Wireless Configuration          WZCSVC          Running
                Auto            Share Process
c:\windows\system32\svchost.exe -
k netsvcs       Normal          LocalSystem     0

Network Provisioning Service                    xmlprov
                Stopped         Manual          Share
Process         c:\windows\system32\svchost.exe -
k netsvcs       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
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\System Tools        All
Users:Accessories\System Tools                  All Users

Administrative Tools            All
Users:Administrative Tools      All Users
Microsoft Network Monitor       All Users:Microsoft
Network Monitor                 All Users
Microsoft SQL Server            All Users:Microsoft
SQL Server      All Users
Microsoft Visual Studio .NET 2003               All
Users:Microsoft Visual Studio .NET 2003         All Users

Microsoft Visual Studio .NET 2003\Visual Studio
.NET Tools      All Users:Microsoft Visual Studio
.NET 2003\Visual Studio .NET Tools              All Users

Startup         All Users:Startup               All Users

Sysinternals PsTools            All Users:Sysinternals
PsTools         All Users
Accessories     NT
AUTHORITY\SYSTEM:Accessories            NT
AUTHORITY\SYSTEM
Accessories\Accessibility       NT
AUTHORITY\SYSTEM:Accessories\Accessibility
                NT AUTHORITY\SYSTEM

Accessories\Entertainment NT
AUTHORITY\SYSTEM:Accessories\Entertainment
                NT AUTHORITY\SYSTEM
Startup         NT AUTHORITY\SYSTEM:Startup
                NT AUTHORITY\SYSTEM
Accessories     DL25\Administrator:Accessories
                DL25\Administrator
Accessories\Accessibility
                DL25\Administrator:Accessories\Acc
essibility      DL25\Administrator
Accessories\Communications
                DL25\Administrator:Accessories\Co
mmunications    DL25\Administrator

Accessories\Communications\HyperTerminal
                DL25\Administrator:Accessories\Co
mmunications\HyperTerminal
                DL25\Administrator
Accessories\Entertainment
                DL25\Administrator:Accessories\Ent
ertainment      DL25\Administrator
Administrative Tools
                DL25\Administrator:Administrative
Tools           DL25\Administrator
Benchcraft      DL25\Administrator:Benchcraft
                DL25\Administrator
QLogic Corporation
                DL25\Administrator:QLogic
Corporation     DL25\Administrator
QLogic Corporation\SANblade Control VIX
                DL25\Administrator:QLogic
Corporation\SANblade Control VIX
                DL25\Administrator
Startup         DL25\Administrator:Startup
                DL25\Administrator

[Startup Programs]
```

Program	Command	User Name	Location
desktop	desktop.ini	NT AUTHORITY\SYSTEM	Startup
desktop	desktop.ini	DL25\Administrator	Startup
desktop	desktop.ini	.DEFAULT	Startup
desktop	desktop.ini	All Users	Common Startup
AClntUsr	c:\program files\altiris\aclient\aclntusr.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
WordPad Document	"%programfiles%\windows nt\accessories\wordpad.exe"
Windows Media Services DRM Storage object	Not Available
Bitmap Image	mspaint.exe

[Windows Error Reporting]

Time	Type	Details

[Internet Settings]

[Internet Explorer]

[Following are sub-categories of this main category]
[Summary]

Item	Value
Version	6.0.3790.1830
Build	63790.1830
Application Path	C:\Program Files\Internet Explorer
Language	English (United States)
Active Printer	Not Available
Cipher Strength	128-bit
Content Advisor	Disabled
IEAK Install	No

[File Versions]

File	Version	Size	Date	Path	Company
actxprxy.dll	6.0.3790.1830	97 KB	3/24/2005 4:55:26 PM	C:\WINDOWS\system32	Microsoft Corporation
advpack.dll	6.0.3790.1830	98 KB	3/24/2005 4:55:28 PM	C:\WINDOWS\system32	Microsoft Corporation
asctrls.ocx	6.0.3790.0	90 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
browselc.dll	6.0.3790.0	62 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
browseui.dll	6.0.3790.2564	1,012 KB	11/7/2005 2:19:28 AM	C:\WINDOWS\system32	Microsoft Corporation
cdfview.dll	6.0.3790.1830	149 KB	3/24/2005 4:56:32 PM	C:\WINDOWS\system32	Microsoft Corporation
comctl32.dll	5.82.3790.1830	585 KB	3/24/2005 4:57:56 PM	C:\WINDOWS\system32	Microsoft Corporation
dxtrans.dll	6.3.3790.2564	208 KB	11/7/2005 2:19:28 AM	C:\WINDOWS\system32	Microsoft Corporation
dxtmsft.dll	6.3.3790.1830	355 KB	3/24/2005 5:00:58 PM	C:\WINDOWS\system32	Microsoft Corporation
iecont.dll	<File Missing>	Not Available	Not Available	Not Available	
iecontlc.dll	<File Missing>	Not Available	Not Available	Not Available	
iedkcs32.dll	16.0.3790.1830	324 KB	3/24/2005 5:04:58 PM	C:\WINDOWS\system32	Microsoft Corporation
iepeers.dll	6.0.3790.2564	248 KB	11/7/2005 2:19:28 AM	C:\WINDOWS\system32	Microsoft Corporation
iesetup.dll	6.0.3790.1830	61 KB	3/24/2005 5:04:58 PM	C:\WINDOWS\system32	Microsoft Corporation
ieuinit.inf	Not Available	24 KB	3/24/2005 5:04:58 PM	C:\WINDOWS\system32	Not Available
iexplore.exe	6.0.3790.1830	92 KB	3/24/2005 5:04:58 PM	C:\Program Files\Internet Explorer	Microsoft Corporation
imgutil.dll	6.0.3790.1830	38 KB	3/24/2005 5:05:04 PM	C:\WINDOWS\system32	Microsoft Corporation
inetcpl.cpl	6.0.3790.1830	358 KB	3/24/2005 5:05:06 PM	C:\WINDOWS\system32	Microsoft Corporation
inetcplc.dll	6.0.3790.0	109 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
inseng.dll	6.0.3790.1830	94 KB	3/24/2005 5:05:06 PM	C:\WINDOWS\system32	Microsoft Corporation
mlang.dll	6.0.3790.1830	578 KB	3/24/2005 5:07:20 PM	C:\WINDOWS\system32	Microsoft Corporation
msencode.dll	2002.10.4.0	112 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	□□□• □v□□
mshta.exe	6.0.3790.1830	30 KB	3/24/2005 5:07:26 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtml.dll	6.0.3790.2577	3,040 KB	11/23/2005 5:06:18 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtml.tlb	6.0.3790.1830	1,320 KB	3/24/2005 5:07:26 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtmled.dll	6.0.3790.1830	455 KB	3/24/2005 5:07:26 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtmler.dll	6.0.3790.1830	56 KB	3/24/2005 5:07:26 PM	C:\WINDOWS\system32	Microsoft Corporation
msident.dll	6.0.3790.1830	48 KB	3/24/2005 5:07:28 PM	C:\WINDOWS\system32	Microsoft Corporation
msidntld.dll	6.0.3790.0	15 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
msieftp.dll	6.0.3790.1830	244 KB	3/24/2005 5:07:28 PM	C:\WINDOWS\system32	Microsoft Corporation
msrating.dll	6.0.3790.1830	144 KB	3/24/2005 5:07:36 PM	C:\WINDOWS\system32	Microsoft Corporation
mstime.dll	6.0.3790.2564	524 KB	11/7/2005 2:19:29 AM	C:\WINDOWS\system32	Microsoft Corporation
occache.dll	6.0.3790.1830	94 KB	3/24/2005 5:08:34 PM	C:\WINDOWS\system32	Microsoft Corporation
proctexe.ocx	6.3.3790.1830	83 KB	3/24/2005 5:12:26 PM	C:\WINDOWS\system32	Intel Corporation
sendmail.dll	6.0.3790.1830	56 KB	3/24/2005 5:13:36 PM	C:\WINDOWS\system32	Microsoft Corporation
shdoclc.dll	6.0.3790.0	589 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation
shdocvw.dll	6.0.3790.2580	1,478 KB	12/1/2005 7:13:55 AM	C:\WINDOWS\system32	Microsoft Corporation
shfolder.dll	6.0.3790.1830	25 KB	3/24/2005 5:13:36 PM	C:\WINDOWS\system32	Microsoft Corporation
shlwapi.dll	6.0.3790.2564	314 KB	11/7/2005 2:19:29 AM	C:\WINDOWS\system32	Microsoft Corporation
tdc.ocx	1.3.0.3130	58 KB	3/25/2003 4:00:00 AM	C:\WINDOWS\system32	Microsoft Corporation

url.dll 6.0.3790.1830 37 KB
3/24/2005 5:26:12 PM
C:\WINDOWS\system32
Microsoft Corporation
urlmon.dll 6.0.3790.2564 675 KB
11/7/2005 2:19:30 AM
C:\WINDOWS\system32
Microsoft Corporation
webcheck.dll 6.0.3790.1830 273 KB
3/24/2005 5:26:16 PM
C:\WINDOWS\system32
Microsoft Corporation
wininet.dll 6.0.3790.2564 647 KB
11/7/2005 2:19:30 AM
C:\WINDOWS\system32
Microsoft Corporation

[Connectivity]

Item Value
Connection Preference Never dial

LAN Settings

AutoConfigProxy wininet.dll
AutoProxyDetectMode Disabled
AutoConfigURL
Proxy Disabled
ProxyServer itgproxy:80
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.SQLTPCKIT\Local Settings\Temporary Internet Files
Total Disk Space Not Available
Available Disk Space Not Available
Maximum Cache Size Not Available
Available Cache Size Not Available

[List of Objects]

Program File Status CodeBase
WUWebControl Class Installed
http://update.microsoft.com/windowsupdate/v6/V5Controls/en/x86/client/wuweb_site.cab?1138820495434
{9F1C11AA-197B-4942-BA54-47A8489BB47F}
Not Available
http://v4.windowsupdate.microsoft.com/CAB/x86/unicode/iuctl.CAB?38455.6793981481

[Content]

[Following are sub-categories of this main category]
[Summary]

Item Value
Content Advisor Disabled

[Personal Certificates]

Issued To Issued By Validity
Signature Algorithm
No personal certificate information available

[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
My Computer Custom
Local intranet Custom
Trusted sites Custom
Internet Custom
Restricted sites Custom

COM+ Settings

TPCC.AllTxns:
Activation:
Enable Object Pooling selected
Minimum Pool Size: 59
Maximum Pool Size: 59
Creation Timeout: 60000
Enable Object Construction
Enable Just In Time Activation
Concurrency:
Concurrency Required

Microsoft IIS Registry Parameters

Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo\Parameters]
"ListenBackLog"=dword:00008ca0
"MaxPoolThreads"=dword:00000ffe
"PoolThreadLimit"=dword:00003ff8
"ThreadTimeout"=dword:00015180

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo\Performance]
"Library"="infoctrs.dll"
"Close"="CloseINFOPerformanceData"
"Collect"="CollectINFOPerformanceData"
"Open"="OpenINFOPerformanceData"
"PerfIniFile"="infoctrs.ini"
"Last Counter"=dword:00001202
"Last Help"=dword:00001203
"First Counter"=dword:000011c2
"First Help"=dword:000011c3
"Object List"="4546"
"Library Validation Code"=hex:00,b5,b9,10,50,4b,c5,01,00,20,00,00,00,00,00,00
"WbemAdapFileSignature"=hex:4c,c3,d3,e7,44,ca,56,e0,f3,e8,a0,14,52,26,fb,0f
"WbemAdapFileTime"=hex:0c,a5,68,10,50,4b,c5,01
"WbemAdapFileSize"=dword:00002000
"WbemAdapStatus"=dword:00000000

World Wide Web Service Registry Parameters

Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC]
"Type"=dword:00000020
"Start"=dword:00000002
"ErrorControl"=dword:00000001
"ImagePath"=hex(2):25,00,53,00,79,00,73,00,74,00,65,00,6d,00,52,00,6f,00,6f,00,\

74,00,25,00,5c,00,53,00,79,00,73,00,74,00,65,00,6d,00,33,00,32,00,5c,00,73,\

00,76,00,63,00,68,00,6f,00,73,00,74,00,2e,00,65,00,78,00,65,00,20,00,2d,00,\

6b,00,20,00,69,00,69,00,73,00,73,00,76,00,63,00,73,00,00,00
"DisplayName"="World Wide Web Publishing Service"
"DependOnService"=hex(7):52,00,50,00,43,00,53,00,53,00,00,00,48,00,54,00,54,00,\

50,00,46,00,69,00,6c,00,74,00,65,00,72,00,00,00,49,00,49,00,53,00,41,00,44,\
00,4d,00,49,00,4e,00,00,00,00,00
"DependOnGroup"=hex(7):00,00
"ObjectName"="LocalSystem"
"Description"="Provides Web connectivity and administration through the Internet Information Services Manager"
"FailureActions"=hex:80,51,01,00,00,00,00,00,00,00,00,00,03,00,00,00,44,00,4c,\

00,01,00,00,00,01,00,00,00,01,00,00,00,01,00,00,00,01,00,00,00,01,00,00,00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters]
"MajorVersion"=dword:00000006
"MinorVersion"=dword:00000000
"InstallPath"="C:\\WINDOWS\\system32\\inetsrv"
"AccessDeniedMessage"="Error: Access is Denied."
"ServiceDll"=hex(2):43,00,3a,00,5c,00,57,00,49,00,4e,00,44,00,4f,00,57,00,53,\

```
00,5c,00,73,00,79,00,73,00,74,00,65,00,6d,00,33
,00,32,00,5c,00,69,00,6e,00,\

65,00,74,00,73,00,72,00,76,00,5c,00,69,00,69,00
,73,00,77,00,33,00,61,00,64,\
  00,6d,00,2e,00,64,00,6c,00,6c,00,00,00
"AcceptExOutstanding"=dword:00000028

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\W3SVC\Performance]
"Library"="C:\\WINDOWS\\system32\\inetsrv\\w
3ctrs.dll"
"Open"="OpenW3PerformanceData"
"Close"="CloseW3PerformanceData"
"Collect"="CollectW3PerformanceData"
"PerfIniFile"="w3ctrs.ini"
"Last Counter"=dword:000012fa
"Last Help"=dword:000012fb
"First Counter"=dword:00001204
"First Help"=dword:00001205
"Object List"="4612 4786"
"Library Validation
Code"=hex:00,b5,b9,10,50,4b,c5,01,00,5e,00,00,
00,00,00,00
"WbemAdapFileSignature"=hex:39,e3,6c,2c,b4,b
e,59,f5,17,7c,c4,d5,2f,dc,f7,1a
"WbemAdapFileTime"=hex:c8,18,9d,10,50,4b,c5,
01
"WbemAdapFileSize"=dword:00005e00
"WbemAdapStatus"=dword:00000000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\W3SVC\Security]
"Security"=hex:01,00,14,80,b8,00,00,00,c4,00,00
,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,\

00,00,02,00,88,00,06,00,00,00,00,00,14,00,fd,01
,02,00,01,01,00,00,00,00,00,\

05,12,00,00,00,00,00,18,00,ff,01,0f,00,01,02,00,
00,00,00,00,05,20,00,00,00,\

20,02,00,00,00,00,14,00,8d,01,02,00,01,01,00,0
0,00,00,00,05,04,00,00,00,00,\

00,14,00,8d,01,02,00,01,01,00,00,00,00,00,05,0
6,00,00,00,00,00,14,00,00,01,\

00,00,01,01,00,00,00,00,00,05,0b,00,00,00,00,0
0,18,00,fd,01,02,00,01,02,00,\

00,00,00,00,05,20,00,00,00,23,02,00,00,01,01,0
0,00,00,00,00,05,12,00,00,00,\
  01,01,00,00,00,00,00,05,12,00,00,00
```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\W3SVC\Enum]
"0"="Root\\LEGACY_W3SVC\\0000"
"Count"=dword:00000001
"NextInstance"=dword:00000001

IIS6 Configuration Script

```
@ECHO OFF
@cd %SystemRoot%\System32
@cscript %SystemRoot%\System32\iisext.vbs
/AddFile C:\INETPUB\WWWROOT\tpcc.dll 1 TPCC
0 TPCC DLL                              >
IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.OUT IIS6_CONFIG.ERR /i /y /q
>nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/1/LogType 0

                >>  IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.OUT IIS6_CONFIG.ERR /i /y /q
>nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/1/Root/AccessExecute True
                                        >>
IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/1/Root/AccessRead True
                                        >>
IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/1/Root/AccessScript True
                                        >>
IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/1/Root/AuthAnonymous True
                                        >>
IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/1/Root/AuthNTLM True
                                        >>
IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET
W3SVC/AppPools/DefaultAppPool/AppPoolIdentit
yType 1       >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/AppPools/PeriodicRestartTime 0
                                        >>
IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET
W3SVC/AppPools/PeriodicRestartRequests 0
                        >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/AppPools/PeriodicRestartMemory
0                       >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/AppPools/AppPoolRecycleTime
False                   >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET
W3SVC/AppPools/AppPoolRecycleRequests False
                        >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET
W3SVC/AppPools/AppPoolRecycleSchedule False
                        >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET
W3SVC/AppPools/AppPoolRecycleMemory False
                        >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul

@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET
W3SVC/AppPools/AppPoolRecycleIsapiUnhealthy
False           >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET
W3SVC/AppPools/AppPoolRecycleOnDemand
False           >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET
W3SVC/AppPools/AppPoolRecycleConfigChange
False           >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET
W3SVC/AppPools/AppPoolRecyclePrivateMemory
False           >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
```

```
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/AppPools/PingingEnabled False
                                        >>
IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
@CSCRIPT
%SYSTEMDRIVE%\inetpub\adminscripts\adsutil.
vbs SET W3SVC/AppPools/RapidFailProtection
False                   >> IIS6_CONFIG.out
@If %ErrorLevel% GTR 1 XCOPY
IIS6_CONFIG.ERR+IIS6_CONFIG.OUT
IIS6_CONFIG.ERR /i /y /q >nul
```

TPCC Application Registry Parameters

```
Windows Registry Editor Version 5.00

Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\T
PCC]
"Path"="C:\\Inetpub\\wwwroot\\"
"NumberOfDeliveryThreads"=dword:00000008
"MaxConnections"=dword:00008ca0
"MaxPendingDeliveries"=dword:000009c4
"DB_Protocol"="ODBC"
"TxnMonitor"="COM"
"DbServer"="tcp:15.1.200.2,1443"
"DbName"="tpcc"
"DbUser"="sa"
"DbPassword"="ssdl"
"COM_SinglePool"="YES"
"ConnectDelay"=dword:00000064
"CallNoDuplicatesNewOrder"=dword:00000001
```

NOTE: This is representative of 1 web client. DBServer was varied on every web client to connect to the appropriate SoftNuma node

TCPIP Registry Parameters

```
Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\Services\Tcpip\Parameters]
"NV Hostname"="dl1"
"DataBasePath"=hex(2):25,00,53,00,79,00,73,00
,74,00,65,00,6d,00,52,00,6f,00,6f,\

00,74,00,25,00,5c,00,53,00,79,00,73,00,74,00,65
,00,6d,00,33,00,32,00,5c,00,\

64,00,72,00,69,00,76,00,65,00,72,00,73,00,5c,00
,65,00,74,00,63,00,00,00
"NameServer"=""
"ForwardBroadcasts"=dword:00000000
"IPEnableRouter"=dword:00000000
"Hostname"="dl1"
"Domain"=""
"SearchList"=""
"UseDomainNameDevolution"=dword:00000001
"EnableICMPRedirect"=dword:00000001
"DeadGWDetectDefault"=dword:00000001
"DontAddDefaultGatewayDefault"=dword:000000
00
"EnableSecurityFilters"=dword:00000000
"AllowUnqualifiedQuery"=dword:00000000
"PrioritizeRecordData"=dword:00000001
"NV Domain"=""
"MaxUserPort"=dword:0000fffe
"DhcpNameServer"="15.1.101.1"
"DhcpDomain"="hp-perf.net"
```

RTE Input Parameters

3Tier.pro

```
Profile:        3-tier-8wc-23174wh_Dist2
File Path:      F:\guz\Sqldiablo\3-tier-8wc-
23174wh_Dist2.xml
Version:        5

                Number of Engines: 16

                                Name: DRIVER01
                                Description: Driver 1
                                Directory:
c:\driver1.log
                                Machine: CL18
                                Parameter Set: 3-tier
                                Index: 0
                                Seed: 23332
                                Configured Users:
13860
                                Pipe Name:
DRIVER11072686782
                                Connect Rate: 30
                                Start Rate: 0
                                Max. Concurrency: -1
                                Concurrency Rate: 10
                                CLIENT_NURAND:
233
                                CPU: 0
                                Additional Options:

                                Name: DRIVER02
                                Description: Driver 2
                                Directory:
c:\Driver2.log
                                Machine: CL18
                                Parameter Set: 3-tier
                                Index: 100000000
                                Seed: 23332
                                Configured Users:
13860
                                Pipe Name:
DRIVER21072726532
                                Connect Rate: 30
                                Start Rate: 0
                                Max. Concurrency: -1
                                Concurrency Rate: 10
                                CLIENT_NURAND:
233
                                CPU: 1
                                Additional Options:

                                Name: DRIVER03
                                Description: Driver3
                                Directory:
c:\Driver3.log
                                Machine: CL19
                                Parameter Set: 3-tier
                                Index: 200000000
                                Seed: 23332
                                Configured Users:
13280
                                Pipe Name:
DRIVER31077150719
                                Connect Rate: 30
                                Start Rate: 0
                                Max. Concurrency: -1
                                Concurrency Rate: 10
                                CLIENT_NURAND:
233
                                CPU: 0
                                Additional Options:

                                Name: DRIVER04
                                Description: Driver4
                                Directory:
c:\Driver4.log
                                Machine: CL19
                                Parameter Set: 3-tier
                                Index: 300000000
                                Seed: 23332
                                Configured Users:
13280
                                Pipe Name:
DRIVER41077169610
                                Connect Rate: 30
                                Start Rate: 0
                                Max. Concurrency: -1
                                Concurrency Rate: 10
                                CLIENT_NURAND:
233
                                CPU: 1
                                Additional Options:

                                Name: DRIVER05
                                Description: Driver5
                                Directory:
c:\Driver5.log
                                Machine: CL20
                                Parameter Set: 3-tier
                                Index: 400000000
                                Seed: 23332
                                Configured Users:
14960
                                Pipe Name:
DRIVER51077214969
                                Connect Rate: 30
                                Start Rate: 0
                                Max. Concurrency: -1
                                Concurrency Rate: 10
                                CLIENT_NURAND:
233
                                CPU: 0
                                Additional Options:

                                Name: DRIVER06
                                Description: Driver6
                                Directory:
c:\Driver6.log
                                Machine: CL20
                                Parameter Set: 3-tier
                                Index: 500000000
                                Seed: 23332
                                Configured Users:
14960
```

Pipe Name:
DRIVER61077228391

Connect Rate: 30
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:
233

CPU: 1
Additional Options:

Name: DRIVER07
Description: Driver7
Directory:
c:\Driver7.log

Machine: CL21
Parameter Set: 3-tier
Index: 600000000
Seed: 23332
Configured Users:
15010

Pipe Name:
DRIVER71077244125

Connect Rate: 30
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:
233

CPU: 0
Additional Options:

Name: DRIVER08
Description: Driver8
Directory:
c:\Driver8.log

Machine: CL21
Parameter Set: 3-tier
Index: 700000000
Seed: 23332
Configured Users:
15010

Pipe Name:
DRIVER81077261063

Connect Rate: 30
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:
233

CPU: 1
Additional Options:

Name: DRIVER09
Description: Driver9
Directory:
c:\Driver9.log

Machine: CL22
Parameter Set: 3-tier
Index: 800000000
Seed: 23332
Configured Users:
15010

Pipe Name:
DRIVER91077272813

Connect Rate: 30
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:
233

CPU: 0
Additional Options:

Name: DRIVER10
Description: Driver10
Directory:
c:\Driver10.log

Machine: CL22
Parameter Set: 3-tier
Index: 900000000
Seed: 23332
Configured Users:
15010

Pipe Name:
DRIVER101077283704

Connect Rate: 30
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:
233

CPU: 1
Additional Options:

Name: DRIVER11
Description: Driver11
Directory:
c:\Driver11.log

Machine: CL23
Parameter Set: 3-tier
Index: 1000000000
Seed: 23332
Configured Users:
15010

Pipe Name:
DRIVER111077350938

Connect Rate: 30
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:
233

CPU: 0
Additional Options:

Name: DRIVER12
Description: Driver12
Directory:
c:\Driver12.log

Machine: CL23
Parameter Set: 3-tier
Index: 1100000000
Seed: 23332
Configured Users:
15010

Pipe Name:
DRIVER121077362360

Connect Rate: 30
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:
233

CPU: 1
Additional Options:

Name: DRIVER13
Description: Driver13
Directory:
c:\Driver13.log

Machine: CL24
Parameter Set: 3-tier
Index: 1200000000
Seed: 23332
Configured Users:
14950

Pipe Name:
DRIVER131077378110

Connect Rate: 30
Start Rate: 0
Max. Concurrency: 10
CLIENT_NURAND:
233

CPU: 0
Additional Options:

Name: DRIVER14
Description: Driver14
Directory:
c:\Driver14.log

Machine: CL24
Parameter Set: 3-tier
Index: 1300000000
Seed: 23332
Configured Users:
14950

Pipe Name:
DRIVER141077389407

Connect Rate: 30
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:
233

CPU: 1
Additional Options:

Name: DRIVER15
Description: Driver15
Directory:
c:\Driver15.log

Machine: CL25
Parameter Set: 3-tier
Index: 1400000000
Seed: 23332
Configured Users:
13790

Pipe Name:
DRIVER151077401329

Connect Rate: 30
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:
233

CPU: 0
Additional Options:

Name: DRIVER16
Description: Driver16
Directory:
c:\Driver16.log

Machine: CL25
Parameter Set: 3-tier
Index: 1500000000
Seed: 23332
Configured Users:
13790

Pipe Name:
DRIVER161077415125

Connect Rate: 30
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:
233

CPU: 1
Additional Options:

Number of User groups: 16

Driver Engine:
DRIVER01

IIS Server: dl18
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1 - 1386
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 13860
District id: 1
Scale Down: No

Driver Engine:
DRIVER02

IIS Server: dl18
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1387 -
2772
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 13860
District id: 1
Scale Down: No

Driver Engine:
DRIVER03

IIS Server: DL19
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 2773 -
4100
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 13280
District id: 1
Scale Down: No

Driver Engine:
DRIVER04

IIS Server: DL19
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 4101 -
5428
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 13280
District id: 1
Scale Down: No

Driver Engine:
DRIVER05

IIS Server: DL20
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 5429 -
6924
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 14960
District id: 1
Scale Down: No

Driver Engine:
DRIVER06

IIS Server: DL20
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 6925 -
8420
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 14960
District id: 1
Scale Down: No

Driver Engine:
DRIVER07

IIS Server: DL21
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 8421 -
9921
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 15010
District id: 1
Scale Down: No

Driver Engine:
DRIVER08

IIS Server: DL21
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 9922 -
11422
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 15010
District id: 1
Scale Down: No

Driver Engine:
DRIVER09

IIS Server: DL22
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 11423 -
12923
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 15010
District id: 1
Scale Down: No

Driver Engine:
DRIVER10

IIS Server: DL22
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 12924 -
14424
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 15010
District id: 1
Scale Down: No

Driver Engine:
DRIVER11

IIS Server: DL23
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 14425 -
15925
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 15010
District id: 1
Scale Down: No

Driver Engine:
DRIVER12

IIS Server: DL23
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 15926 -
17426
w_id Min Warehouse:
1
w_id Max Warehouse:
23174
Scale: Normal
User Count: 15010
District id: 1
Scale Down: No

Driver Engine:
DRIVER13

IIS Server: DL24
SQL Server: sqldiablo
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 17427 -
18921
w_id Min Warehouse:
1

```
                    w_id Max Warehouse:
23174
                    Scale: Normal
                    User Count: 14950
                    District id: 1
                    Scale Down: No

                    Driver Engine:
DRIVER14
                    IIS Server: DL24
                    SQL Server: sqldiablo
                    Database: tpcc
                    User: sa
                    Protocol: HTML
                    w_id Range: 18922 -
20416
                    w_id Min Warehouse:
1
                    w_id Max Warehouse:
23174
                    Scale: Normal
                    User Count: 14950
                    District id: 1
                    Scale Down: No

                    Driver Engine:
DRIVER15
                    IIS Server: DL25
                    SQL Server: sqldiablo
                    Database: tpcc
                    User: sa
                    Protocol: HTML
                    w_id Range: 20417 -
21795
                    w_id Min Warehouse:
1
                    w_id Max Warehouse:
23174
                    Scale: Normal
                    User Count: 13790
                    District id: 1
                    Scale Down: No

                    Driver Engine:
DRIVER16
                    IIS Server: DL25
                    SQL Server: sqldiablo
                    Database: tpcc
                    User: sa
                    Protocol: HTML
                    w_id Range: 21796 -
23174
                    w_id Min Warehouse:
1
                    w_id Max Warehouse:
23174
                    Scale: Normal
                    User Count: 13790
                    District id: 1
                    Scale Down: No

          Number of Parameter Sets: 3


                    ~Default
                    Default Parameter Set
                                 Txn
Think  Key    RT     RT     Menu
                                 Weight
Time   Time   Delay  Fence  Delay
                    New Order
10.00          12.05          18.00          0.10
               5.00           0.10
                    Payment                  10.00
               12.05          3.00           0.10
               5.00           0.10
                    Delivery                 1.00
               5.05           2.00           0.10
               5.00           0.10
                    Stock Level              1.00
               5.05           2.00           0.10
               20.00          0.10
                    Order Status             1.00
               10.05          2.00           0.10
               5.00           0.10


                    Shutdown
                    Shutdown
                                 Txn
Think  Key    RT     RT     Menu
                                 Weight
Time   Time   Delay  Fence  Delay
                    New Order
10.00          10.05          120.00         0.10
               5.00           0.10
                    Payment                  10.00
               10.05          120.00         0.10
               5.00           0.10
                    Delivery                 1.00
               10.05          120.00         0.10
               5.00           0.10
                    Stock Level              1.00
               10.05          120.00         0.10
               5.00           0.10
                    Order Status             1.00
               10.05          120.00         0.10
               5.00           0.10


                    3-tier


                                 Txn
Think  Key    RT     RT     Menu
                                 Weight
Time   Time   Delay  Fence  Delay
                    New Order
44.94          12.05          18.00          0.10
               5.00           0.10
                    Payment                  43.02
               12.05          3.00           0.10
               5.00           0.10
                    Delivery                 4.01
               5.05           2.00           0.10
               5.00           0.10
                    Stock Level              4.01
               5.05           2.00           0.10
               20.00          0.10
                    Order Status             4.02
               10.05          2.00           0.10
               5.00           0.10
```

Appendix D 60 Day Space Requirements

TPC-C 60 Day Space Requirements						
Warehouses	25,000				TpmC	291,644.00
Table	Rows	Data KB	Index KB	Extra 5% KB	8hr Space	Total Space KB
Warehouse	25,000	2,672	152	141		2965
District	250,000	27,784	208	1,400		29392
Customer	750,000,000	545,454,552	34,032,528	28,974,354		608461434
History	759,881,769	44,738,008	328,744		7,864,899	45066752
NewOrder	226,115,382	5,928,976	19,224	297,410		6245610
Orders	760,344,802	26,489,792	110,752		9,613,450	26600544
OrderLine	7,603,315,799	505,595,720	2,318,400		164,173,128	507914120
Item	100,000	9,416	168	479		10063
Stock	2,500,000,000	800,000,000	1,687,104	40,084,355		841771459
Total		1,928,246,920	38,497,280	69,358,139	181,651,477	2,036,102,339
	MB					
Dynamic Space	563,304	Sum of Data for Order, Orderline and History				
Static Space	1,425,077	Sum of Data+Index+5%-Dynamic Space				
Free Space	na	Total Allocated Spac - (Dynamic + Static Space)				
Daily Growth	105,142	(Dynamic Space/(W*62.5))*tpmc				
Daily Spread	-	(Free Space -1.5*Daily Growth) Zero Assumed				
60 Day Space MB	7,733,594					
60 Day Space GB	7,552.34	GB				
Log Size	350,000.00	MB				
KB Per New Order	6.41	KB				
8 hr log MB	875,775	MB				
8 hr log GB	855.2491	GB				
		Disks	Disks	Formatted Size	Space	
Space Usage	GB Needed	Measured	Size	Size	Available	
180 Day Space DB	7,552.34	756	36GB	33.918	25642.31	
					0.00	
					0.00	
Total DB		756.00			**25,642.31**	
8-hr log + mirror	1,710.50	14	146GB	136.733	**1,914.26**	
OS, Swap	3	1	9GB	0.000	0.00	
Total Storage	9,265.84	GB			27,556.57	

Appendix E 3rd Party Pricing

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 425 882 8080
Fax 425 936 7329
http://www.microsoft.com/

Microsoft

March 13, 2006

Hewlett-Packard Company
Jason Goertz
1 Microsoft Way
Redmond, WA 98052

Mr. Goertz:

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
810-03134	**SQL Server 2005 Enterprise Itanium Edition** *Per Processor License Discount Schedule: Open Program - Level C Unit Price reflects a 6% discount from the retail unit price of $24,999.*	$23,432	4	$93,728
P73-00295	**Windows Server 2003 Standard Edition** *Server License Only - No CALs Discount Schedule: Open Program - No Level Unit Price reflects a 28% discount from the retail unit price of $999.*	$719	8	$5,752
254-00170	**Visual C++ Standard Edition** *No Discounts Applied*	$109	1	$109
N/A	**Microsoft Problem Resolution Services** *Professional Support (1 Incident)*	$245	1	$245

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

Some products may not be currently orderable but will be available through Microsoft's normal distribution channels by November 7, 2005.

Defect support is included in the purchase price. Additional support is available from Microsoft PSS on an incident by incident basis at $245 per call.

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: PCjago0613038396.
Please include this Reference ID in any correspondence regarding this price quote.

- Once ready, click Check-Out to place your order.
- If you like to order by phone, Call us Toll-Free 1.888.586.7948 and reference this code **POR-434422**

Payments Accepted

- **Credit Cards**
  Visa, Master Card, Amex and Discover.
- **Check On-Line**
  Pay directly from checking account. (US Customers only)
- **COD (Cash on Delivery)**
  Pay when you receive your shipment (US Customers only)
- **Purchase Order**
  US Business and government can pay by purchase order.
- **Wire Transfer**
  International customers pay by wire transfer.

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Monday March 13th 2006

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1-866-463-3372

Switches

Brocade 3250 Switches Brocade 3252 Switches Brocade 3200 Series Software Brocade 3850 Switches Brocade 3852 Switches Brocade 3800 Series Software Brocade 3800 Series Parts Brocade 3900 Switches Brocade 3900 Series Software Brocade 3900 Series Parts DS8B2 / DS8B3 DS8Bx Software DS16B2 / DS16B3 DS16Bx Software DS24M2 DS24M2 Software DS32B2 DS32B2 Software DS32M2 DS32M2 Software Sphereon 4300 Sphereon 4500 Sphereon 3232 IPS-3300 SANbox 5200 / 5202 Switches SANbox 5200

Details	Name	Unit Price	Quantity	Total	Select
SB5200-16A	SB5200-16A	$4,371.00	2	$8,742.00	☐
Prime-SB5200	Prime-SB5200	$1,327.32	6	$7,963.92	☐
FTRJ8519P1BNL	Finisar FTRJ-8519 2Gb SFP	$84.00	31	$2,604.00	☐
			Grand Total:	$19,309.92	Delete
	Continue Shopping		Update Totals		

Press checkout to enter your customer and shipping information.

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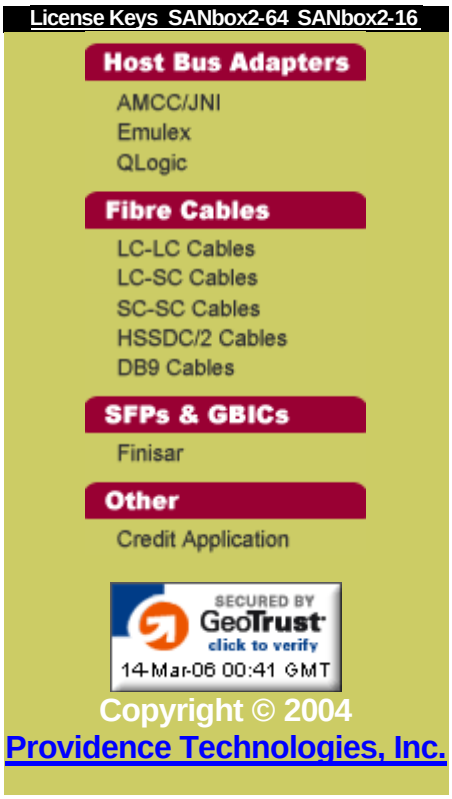
License Keys SANbox2-64 SANbox2-16
Host Bus Adapters
AMCC/JNI
Emulex
QLogic
Fibre Cables
LC-LC Cables
LC-SC Cables
SC-SC Cables
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DB9 Cables
SFPs & GBICs
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Other
Credit Application
SECURED BY
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Hewlett Packard Company	HP Integrity rx4640-8			TPCC Rev 5.6 December 2005 Report Date March 27, 2006		
Description	Price Key	Part Numbr	Unit Price	0	Extended Price	3 Yr Maint Price
HP Integrity rx4640 base system (includes Single power supply, 3-Year Limited Warranty, VGA, dual port GigE LAN card an one dual channel U320 SCSI controller card)	1	AB370B	$6,800	1	$6,800	
36GB 15K hot Plug U320 SCSI Low Profile Drive	1	AB420A	$389	1	$389	
DVD-ROM slimline drive	1	A7163B	$150	1	$150	
3 Year Svc & Support Price (Hardware and Software)	1	HA110A3-6KT	$15,253	1		$15,253
Dual Core Itanium 2 9050 Processor	1	AD268A	$14,663	4	$58,652	
16Gb Memory Quad (4x4gb dimms)	1	AB475A	$27,300	8	$218,400	
32DIMM mem carrier board, 4U chassis	1	A9739B	$4,450	1	$4,450	
2 Port 1000Base-T Gigabit Adapter	1	A9900A	Included	1	$0	
FC-HBA 2GB, 2 Channel (LP1050DC)	1	AB466A	$2,450	1	$2,450	
36GB, 15krpm Ultra3 Wide disk	1	286776-B22	$269	756	$203,364	
36GB, 15krpm Ultra3 Wide disk (10% Spares)	1	286776-B22	$269	76	$20,444	
Storageworks MSA30 SB	1	302969-B21	$2,829	36	$101,844	
Storageworks MSA30 SB (10% Spares)	1	302969-B21	$2,829	4	$11,316	
HP9000 Standard Rack System E41	1	A4902A	$1,910	5	$9,550	
UPS - HP R1500 XR Low Voltage US	1	204404-001	$866	1	$866	
HP Power Distribution Unit 120-240V	1	A5137AZ	$145	5	$725	
Modular Storage Array 1000	1	201723-B22	$6,995	19	$132,905	
Modular Storage Array 1000 (10% spares)	1	201723-B22	$6,995	2	$13,990	
MSA1000 controller (10% spares)	1	218231-B22	$4,290	2	$8,580	
146GB, 10krpm disk	1	286716-B22	$459	14	$6,426	
146GB, 10krpm disk (10% spares)	1	286716-B22	$459	2	$918	
5M LC to LC Cable Kit	1	221692-B22	$82	29	$2,378	
TA5300 Enclosure for DAT tape	1	C7508B	$729	1	$729	
DAT Tape	1	C7497B	$1,049	1	$1,049	
	Server Subtotal				**$806,375**	**$15,253**
Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems, SP1	1	T2030A	$2,149	1	$2,149	
	Server Software Subtotal				**$2,149**	**$0**
DL140 G2 3.6GHz Xeon 1GB 80GB SATA	1	383504-001	$2,149	8	$17,192	
2nd 3.6GHz Xeon Processor for DL140	1	378283-B21	$999	8	$7,992	
HP 3 Yr. 4h 24x7 ProLiant DL140 Hardware Support	1	HA104A3 #7HA	$419	8		$3,352
HP Mouse	1	P5304M	$28	8	$224	
HP Enhanced Keyboard (USB/PS2)	1	DC852A#ABA	$25	1	$25	
HP ProCurve 2824 port switch	1	J4903A	$2,499	1	$2,499	
HP 3y 24x7 Procurve 2824 support	1	HA104A3 #4AE	$1,041	1		$1,041
S7540 17in CRT Monitor	1	PF997AA	$139	1	$139	
	Client Subtotal				**$28,071**	**$4,393**
	***Total Extended Price:**					**$856,241**
HP's Large Configuration Discount *	***Total Discount:**					**-$200,617**
Price Key: 1-HP	**3 year cost of ownership:**					**$655,624 USD**

* A 23.43% discount was based on the overall value of the specific components from HP (Price Key 1) in this single quotation. Discounts for similarly sized configurations will be similar to those quoted here, but may vary based on the components in the configuration

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing section of the TPC benchmark specification. If you find that the state prices are not available to these terms, please inform the TPC at pricing@tpc.org. Thank you