TPC Benchmark® C
Full Disclosure Report

HP Integrity rx6600

using Microsoft SQL Server 2005 Enterprise Itanium Edition
on Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems, SP1

First Edition
June 11, 2007

First Edition - June 11, 2007

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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., June 11, 2007

Abstract

Overview

This report documents the methodology and results of the TPC Benchmark® C test conducted on the HP Integrity rx6600 in a client/server configuration, using Microsoft SQL Server 2005 Enterprise Itanium Edition 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

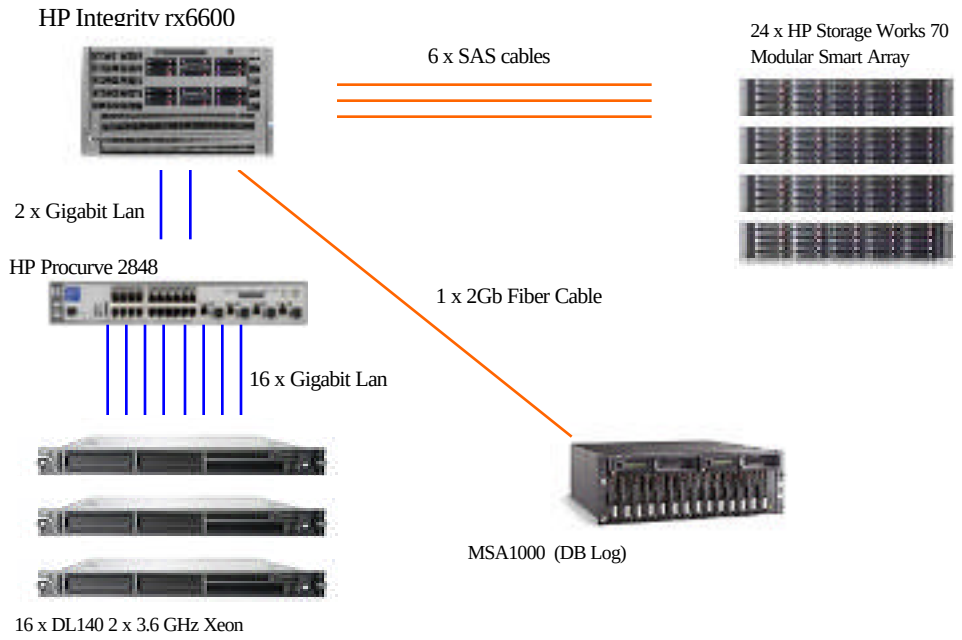
The following pages contain the executive summary of the benchmark results for the HP Integrity rx6600 system. The Standard System Summary is given below.

Company Name	System Name	Database Software	Operating System
Hewlett-Packard Company	HP Integrity rx6600	Microsoft SQL Server 2005 Enterprise Itanium Edition	Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems, SP1
Total System Cost	**TPC-C Throughput**	**Price/Performance**	**Availability Date**
$673,351 USD	372,140 tpmC	$1.81 USD per tpmC	June 11, 2007

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.

Hewlett-Packard Company	HP Integrity rx6600			TPC-C Rev 5.8 TPC-C Pricing Rev 1.1.0
Total System Cost	**TPC Throughput**	**Price/Performance**	**Report Date**	**Availability Date**
$673,351 USD	**372,140 tpmC**	**$1.81 USD per tpmC**	**June 11, 2007**	**June 11, 2007**
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 - 16 x 2/2/4 Intel Xeon @ 3.6 GHz	Microsoft SQL Server 2005 Enterprise Itanium Edition	Microsoft Windows Server 2003, Enterprise Edition for Itanium-based Systems, SP1	Microsoft Visual C++ Microsoft COM+ Transaction Monitor	297,840



System Components	Server		Each Client	
	Qty	**Type**	**Qty**	**Type**
Procs/Cores/Thrds **Cache Memory**	4/8/16	Dual Core Itanium 2 Processor 9050 CPUs 24 MB L3 cache	2/2/4	3.6 GHz Intel Xeon 512 KBYTE L2 Cache
Memory	12	4 x 4 Gbyte	1	1024 MB
Disk Controllers	6 1	HP Smart Array P600/256 Controller FC-HBA 4GB, FC2143	1	ATA
Disk Drives	576 12 2	36GB, 15K SAS HDD HP 300GB 10 KRPM U320 HP 36 GB 10 KRPM SAS	1	80 Gbyte disk
Total Storage		22711.00		80 Gbyte
Tape Drives	1	HP TA5300		
Terminals	1	Console Terminal	1	Console Terminal

Hewlett Packard Company	HP rx6600	TPCC Rev 5.8 February 2007 11-Jun-07			
Description	Price Key	Part Numbr	Unit Price	Qty	Extended Price	3 Yr Maint Price
HP Integrity rx6600 with (4) 1.6GHz/24MB Processor includes dual port 10/100/1000GbE adapter and 1 power supply	1	AD134A#180	$43,845	1	$43,845	
I/O backplane	1	AD296A	$0	1	$0	
core I/O: 8-port SAS Smart Array RAID Controller Card	1	AB036A #100	$500	1	$500	
HP Smart Array P600/256 BBWC Controller	1	337972-B21	$729	6	$4,374	
192GB - 16GB DDR2 memory quad (4x4GB)	1	AB566A	$18,977	12	$227,724	
48 DIMM Carrier Board	1	AD127A	$4,495	1	$4,495	
36GB, 10K SAS HDD	1	AD140A	$356	2	$712	
Racked form factor kit	1	AD053A	$150	1	$150	
3 Year Support (Hardware and Software)	1	HA110A3				$8,577
DVD-ROM	1	AD142A	$230	1	$230	
FC-HBA 4GB, FC2143	1	AD167A	$1,225	1	$1,225	
HP 36GB 3G SAS 15K SFF SP HDD	1	431933-B21	$369	576	$212,544	
HP 36GB 3G SAS 15K SFF SP HDD (10% Spares)	1	431933-B21	$369	58	$21,402	
HP StorageWorks 70 Modular Smart Array	1	418800-B21	$3,199	24	$76,776	
HP StorageWorks 70 Modular Smart Array (10% Spares)	1	418800-B21	$3,199	3	$9,597	
HP Rack 5642	1	358254-B21	$865	3	$2,595	
UPS - HP R1500 XR Low Voltage US	1	204404-001	$866	1	$866	
HP 16A High Voltage Modular PDU	1	252663-B24	$299	6	$1,794	
Modular Storage Array 1000	1	201723-B22	$6,499	1	$6,499	
MSA1000 Controller, with 256 MB cache	1	218231-B22	$4,290	1	$4,290	
300 GB Ultra320 10K Universal Hard Drive	1	350964-B22	$839	12	$10,068	
300 GB Ultra320 10K Universal Hard Drive (10% Spares)	1	350964-B22	$839	2	$1,678	
5M LC to LC Cable Kit	1	221692-B22	$82	1	$82	
TA5300 Enclosure for DAT tape	1	C7508B	$729	1	$729	
DAT Tape	1	C7497C	$899	1	$899	
	Server Subtotal				**$633,074**	**$8,577**
Windows Server 2003	1	T2373A	$3,602	1	$3,602	
SQL Server 2005	2	810-03134	$23,432	4	$93,728	
	Server Software Subtotal				**$97,330**	**$0**
DL140 G2 X3.6/2MB NHP SCSI US Rck Svr	1	383503-001	$2,799	16	$44,784	
2nd 3.6GHz Xeon Processor for DL140	1	378283-B21	$1,079	16	$17,264	
3 Year Support (ProLiant Hardware)	1	HA110A3	$468	16		$7,488
HP Mouse	1	P5304M	$28	1	$28	
HP Enhanced Keyboard (USB/PS2)	1	DC852A#ABA	$25	1	$25	
HP ProCurve 2824 port switch	1	J4903A	$2,499	1	$2,499	
3 Year Support (ProCurve Hardware and Software)	1	HA110A3	$1,298	1		$1,298
S7540 17in CRT Monitor	1	PF997AA	$139	1	$139	
D-Link 16-Port Rackmountable KVM Switch with Cables	3	DKVM-16-B	$599	1	$599	
	Client Subtotal				**$65,338**	**$8,786**
Microsoft Windows Server 2003 Standard Edition	2	P73-00295	$719	16	$11,504	
Microsoft Visual C++ Standard	2	254-00170	$109	1	$109	
Microsoft Problem Resolution	2		$245	1		$245
	Client Software Subtotal				**$11,613**	**$245**
	***Total Extended Price:**					**$824,963**
HP's Large Configuration Discount *	***Total Discount:**					**-$151,612**
Price Key: 1=HP, 2=Microsoft, 3=KVMS.com	**3 year cost of ownership:**					**$673,351 USD**
	tpmC:					372,140
* A 21.09% discount was based on the overall value of the specific components from HP (Price Key 1) in this single quotation. Discounts for similarly sized configurations will be similar to those quoted here, but may vary based on the components in the configuration	**$/tpmC:**					**$1.81 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

Sales contact Vendor 1: HP Sales Development, 19111 Pruneridge Ave., Cupertino, CA 95014 (408) 447 2320 Sales contact
Vendor 2: Jamie Reding (425) 703-0510 jamiere@microsoft.com Vendor 3= KVMs.com

Numerical Quantities Summary for HP Integrity rx6600

MQTH, Computed Maximum Qualified Throughput 372140 tpmC

Response Times (in seconds)

	90th %-ile	Maximum	Average
New-Order	0.50s	5.28s	0.31s
Payment	0.47s	4.41s	0.28s
Order-Status	0.50s	5.28s	0.30s
Delivery (interactive portion)	0.11s	2.67s	0.11s
Delivery (deferred portion)	0.18s	4.24s	0.12s
Stock-Level	0.77s	3.47s	0.52s
Menu	0.11s	2.69s	0.11s

Response time delay added for emulated components 0.1 seconds

Transaction Mix, in percent of total transactions

New-Order	44.96%
Payment	43.02%
Delivery	4.01%
Stock-Level	4.01%
Order-Status	4.00%

Keying/Think Times

	Keying Time			Think Time		
	Min	Avg	Max	Min	Avg	Max
New-Order	18.00s	18.02s	18.63s	0.00s	12.06s	120.55s
Payment	3.00s	3.02s	3.63s	0.00s	12.07s	120.54s
Order-Status	3.00s	3.02s	3.58s	0.00s	10.07s	100.53s
Delivery (interactive)	3.00s	3.02s	3.61s	0.00s	5.07s	50.53s
Stock-Level	3.00s	3.02s	3.61s	0.00s	5.06s	50.53s

Test Duration

Ramp up time	25	minutes
Measurement interval	120	minutes
Transactions during measurement interval	103318188	
Ramp down time	5	minutes

Checkpointing

Number of checkpoints in measurement interval	4	
Checkpoint Interval	29.67	minutes

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Preface

Document Structure

This is the full disclosure report for a benchmark test of the HP Integrity rx6600 using Microsoft SQL Server 2005 Enterprise Itanium Edition. It meets the requirements of the TPC Benchmark ® C Standard Specification, Revision 5.8 dated February 2007. 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 rx6600. 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, Version 9.00.3042.00.

The processor architecture of the HP Integrity rx6600 was designed for the Dual Core Itanium 2 Processor 9050 processor. The HP Integrity rx6600 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 192 GB of HP SDRAM.

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 12 HP 300GB 10 KRPM U320 hard drives. The MSA1000 disk array was connected to the HP Integrity rx6600 using 1 HP 4GB, FC2143 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 576 36GB, 15K SAS HDDdisk drives housed in 24 HP StorageWorks MSA70 enclosures. The enclosures were daisy chained in groups of four, and connected to the host via 6 HP Smart Array P600 controllers. The disks were configured as a RAID0 Array spanning all 24 (24 of 25 slots were populated) disks in each enclosure, for a total of 24 RAID0 database arrays. The Smart Array P600 caches were disabled on the RAID0 partitions. Additionally, a RAID1+0 volume was configured on each set of 24 disks as fault tolerant backup for the database. Windows partitions were created on the RAID0 volumes to contain the CS and MISC SQL filegroups. The partition sizes were the same on all 24 volumes.

Each of the 16 clients was an HP Proliant DL140 G2 with 2 Intel Xeon Processors at 3.6 GHz, 1024 MB RAM and one 80 GB ATA hard disk, running Microsoft Windows Server 2003 Standard Edition 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. 16 remote terminal emulators (RTEs) emulated 297,840 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's.

Microsoft SQL Server 2005 Enterprise Itanium Edition was configured to utilize "soft NUMA", a feature that allows network connections to be affined to specific groups of CPUs (The HP Integrity rx6600 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 1780 seconds (29 minutes, 40 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.

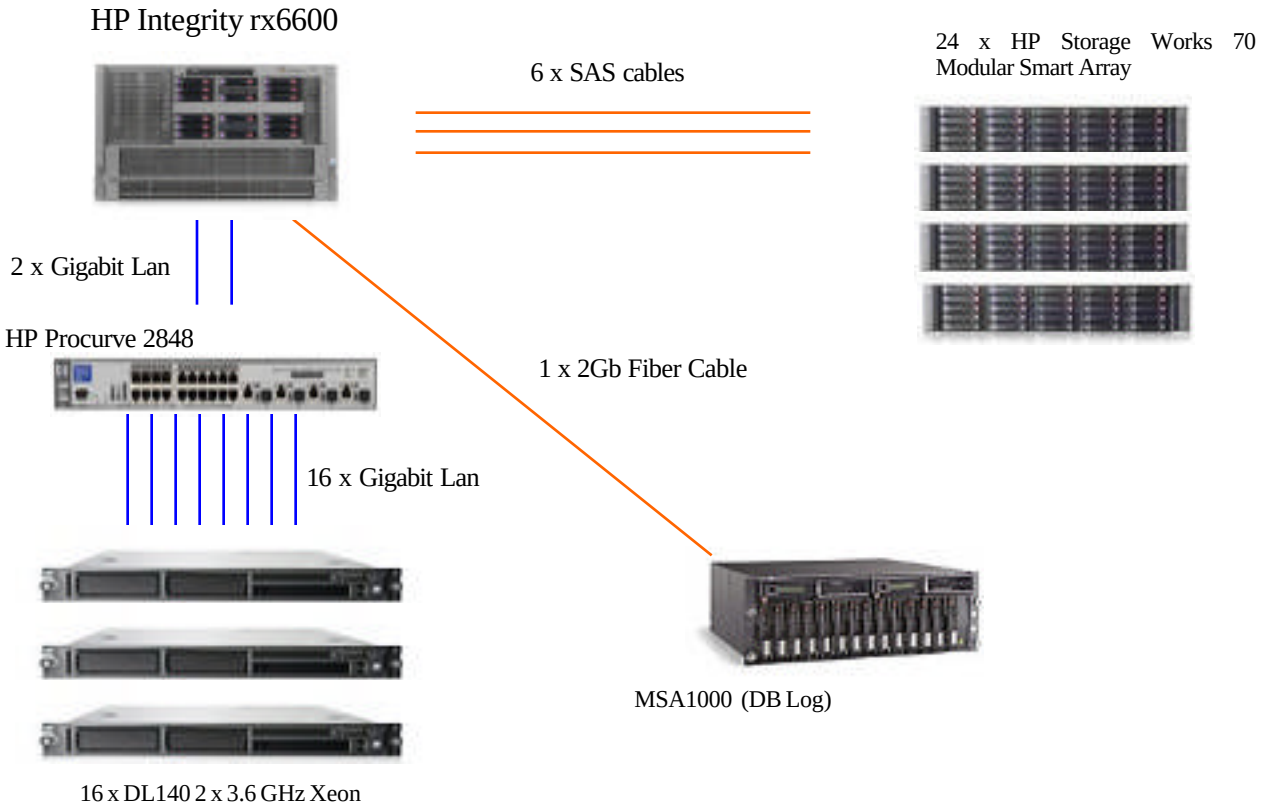
Appendix D contains the 60 day space calculations.

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 590 disk drives, 576 36GB, 15K SAS HDD, 12 HP 300GB 10 KRPM U320 drives for log, and 2 HP 36 GB 10 KRPM SAS(s) for the operating system.

Part of the space on each of the 24 database disk arrays was configured as 1 RAID0 volume over 24 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 24 Arrays was configured as a RAID1+0 volume over all 24 36GB drives. Each volume contained backups of the database.

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	60.00%
Order Status	Non primary key access	60.10%
Delivery	Skipped transactions	0
Transaction Mix	New Order	44.96%
	Payment	43.02%
	Delivery	4.01%
	Stock Level	4.01%
	Order Status	4.00%

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 rx6600. 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 29,784 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 29,784 (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 30,000 warehouses in a single test. The standard driving mechanism was used to generate the transaction load of 297,840 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. 297,840 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 Windows OS.
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 6 HP Smart Array P600/256 Controller Disk Array Controllers. The MSA1000 disk array that held the database log was connected to an HP 4GB, FC2143 Fibrechannel HBA.

The measured database configuration used a total of 590 disks, which included 576 36GB, 15K SAS HDDs for data, 12 HP 300GB 10 KRPM U320 drives for log, and 2 HP 36 GB 10 KRPM SAS drive(s) for the operating system. Part of the space on each of the 24 database disk arrays was configured as 1 RAID0 volume over 24 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 24 Arrays was configured as a RAID1+0 volume over all 24 36 GB drives. Each volume contained backups of the database.

Table 2a shows the complete data distribution.

The database log drive storage was located on 1 HP MSA1000. The MSA1000 held 12 HP 300GB 10 KRPM U320 hard drives. The MSA1000 disk array was connected to the HP Integrity rx6600 using 1 HP 4GB, FC2143 Fibrechannel HBA. The disks were configured as RAID 1+0, and two battery backed up disk array controller caches were enabled and mirrored on the 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

Smart Array P600 Controller #1		WINDOWS DISK ADMIN		**Smart Array P600 Controller #1**		WINDOWS DISK ADMIN	
MSA 70 Enclosure #1		Logical Disk 1		MSA 70 Enclosure #2		Logical Disk 1	
		Partitions (RAID 0): 122GB Disk				Partitions (RAID 0): 122GB Disk	
Disk ID	Physical Disk	1	2	Disk ID	Physical Disk	1	2
1	36GB	G:\MNT\CS1	G:\MNT\MISC1	1	36GB	G:\MNT\CS2	G:\MNT\MISC2
2	36GB	Raw	Raw	2	36GB	Raw	Raw
3	36GB	78.54GB	43.41GB	3	36GB	78.54GB	43.41GB
4	36GB			4	36GB		
5	36GB	Logical Disk 2		5	36GB	Logical Disk 2	
8	36GB	Partitions (RAID 1+0): 345GB		8	36GB	Partitions (RAID 1+0): 345GB	
9	36GB	1		9	36GB	1	
10	36GB	G:\MNT\BACKUP\1\		10	36GB	G:\MNT\BACKUP\2\	
11	36GB	NTFS Volume Backup1		11	36GB	NTFS Volume Backup2	
12	36GB	345 GB		12	36GB	345 GB	
13	36GB			13	36GB		
14	36GB			14	36GB		
15	36GB			15	36GB		
16	36GB			16	36GB		
17	36GB			17	36GB		
18	36GB			18	36GB		
19	36GB			19	36GB		
20	36GB			20	36GB		
21	36GB			21	36GB		
22	36GB			22	36GB		
23	36GB			23	36GB		
24	36GB			24	36GB		
25	Empty			25	Empty		

Smart Array P600 Controller #1		WINDOWS DISK ADMIN		**Smart Array P600 Controller #1**		WINDOWS DISK ADMIN	
MSA 70 Enclosure #3		Logical Disk 1		MSA 70 Enclosure #4		Logical Disk 1	
		Partitions (RAID 0): 122GB Disk				Partitions (RAID 0): 122GB Disk	
Disk ID	Physical Disk	1	2	Disk ID	Physical Disk	1	2
1	36GB	G:\MNT\CS3	G:\MNT\MISC3	1	36GB	G:\MNT\CS4	G:\MNT\MISC4
2	36GB	Raw	Raw	2	36GB	Raw	Raw
3	36GB	78.54GB	43.41GB	3	36GB	78.54GB	43.41GB
4	36GB			4	36GB		
5	36GB	Logical Disk 2		5	36GB	Logical Disk 2	
8	36GB	Partitions (RAID 1+0): 345GB		8	36GB	Partitions (RAID 1+0): 345GB	
9	36GB	1		9	36GB	1	
10	36GB	G:\MNT\BACKUP\3\		10	36GB	G:\MNT\BACKUP\4\	
11	36GB	NTFS Volume Backup3		11	36GB	NTFS Volume Backup4	
12	36GB	345 GB		12	36GB	345 GB	
13	36GB			13	36GB		
14	36GB			14	36GB		
15	36GB			15	36GB		
16	36GB			16	36GB		
17	36GB			17	36GB		
18	36GB			18	36GB		
19	36GB			19	36GB		
20	36GB			20	36GB		
21	36GB			21	36GB		
22	36GB			22	36GB		
23	36GB			23	36GB		
24	36GB			24	36GB		
25	Empty			25	Empty		

Smart Array P600 Controller #2		WINDOWS DISK ADMIN		**Smart Array P600 Controller #2**		WINDOWS DISK ADMIN	
MSA 70 Enclosure #1		Logical Disk 1		MSA 70 Enclosure #2		Logical Disk 1	
		Partitions (RAID 0): 122GB Disk				Partitions (RAID 0): 122GB Disk	
Disk ID	Physical Disk	1	2	Disk ID	Physical Disk	1	2
1	36GB	G:\MNT\CS5	G:\MNT\MISC5	1	36GB	G:\MNT\CS6	G:\MNT\MISC6
2	36GB	Raw	Raw	2	36GB	Raw	Raw
3	36GB	78.54GB	43.41GB	3	36GB	78.54GB	43.41GB
4	36GB			4	36GB		
5	36GB	Logical Disk 2		5	36GB	Logical Disk 2	
8	36GB	Partitions (RAID 1+0): 345GB		8	36GB	Partitions (RAID 1+0): 345GB	
9	36GB	1		9	36GB	1	
10	36GB	G:\MNT\BACKUP\5\		10	36GB	G:\MNT\BACKUP\6\	
11	36GB	NTFS Volume Backup5		11	36GB	NTFS Volume Backup6	
12	36GB	345 GB		12	36GB	345 GB	
13	36GB			13	36GB		
14	36GB			14	36GB		
15	36GB			15	36GB		
16	36GB			16	36GB		
17	36GB			17	36GB		
18	36GB			18	36GB		
19	36GB			19	36GB		
20	36GB			20	36GB		
21	36GB			21	36GB		
22	36GB			22	36GB		
23	36GB			23	36GB		
24	36GB			24	36GB		
25	Empty			25	Empty		
Smart Array P600 Controller #2		WINDOWS DISK ADMIN		**Smart Array P600 Controller #2**		WINDOWS DISK ADMIN	
MSA 70 Enclosure #3		Logical Disk 1		MSA 70 Enclosure #4		Logical Disk 1	
		Partitions (RAID 0): 122GB Disk				Partitions (RAID 0): 122GB Disk	
Disk ID	Physical Disk	1	2	Disk ID	Physical Disk	1	2
1	36GB	G:\MNT\CS7	G:\MNT\MISC7	1	36GB	G:\MNT\CS8	G:\MNT\MISC8
2	36GB	Raw	Raw	2	36GB	Raw	Raw
3	36GB	78.54GB	43.41GB	3	36GB	78.54GB	43.41GB
4	36GB			4	36GB		
5	36GB	Logical Disk 2		5	36GB	Logical Disk 2	
8	36GB	Partitions (RAID 1+0): 345GB		8	36GB	Partitions (RAID 1+0): 345GB	
9	36GB	1		9	36GB	1	
10	36GB	G:\MNT\BACKUP\7\		10	36GB	G:\MNT\BACKUP\8\	
11	36GB	NTFS Volume Backup7		11	36GB	NTFS Volume Backup8	
12	36GB	345 GB		12	36GB	345 GB	
13	36GB			13	36GB		
14	36GB			14	36GB		
15	36GB			15	36GB		
16	36GB			16	36GB		
17	36GB			17	36GB		
18	36GB			18	36GB		
19	36GB			19	36GB		
20	36GB			20	36GB		
21	36GB			21	36GB		
22	36GB			22	36GB		
23	36GB			23	36GB		
24	36GB			24	36GB		
25	Empty			25	Empty		

…..

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Smart Array P600 Controller #6		WINDOWS DISK ADMIN		**Smart Array P600 Controller #6**		WINDOWS DISK ADMIN	
MSA 70 Enclosure #1		Logical Disk 1		MSA 70 Enclosure #2		Logical Disk 1	
		Partitions (RAID 0): 122GB Disk				Partitions (RAID 0): 122GB Disk	
Disk ID	Physical Disk	1	2	Disk ID	Physical Disk	1	2
1	36GB	G:\MNT\CS21	G:\MNT\MISC21	1	36GB	G:\MNT\CS22	G:\MNT\MISC22
2	36GB	Raw	Raw	2	36GB	Raw	Raw
3	36GB	78.54GB	43.41GB	3	36GB	78.54GB	43.41GB
4	36GB			4	36GB		
5	36GB	Logical Disk 2		5	36GB	Logical Disk 2	
8	36GB	Partitions (RAID 1+0): 345GB		8	36GB	Partitions (RAID 1+0): 345GB	
9	36GB	1		9	36GB	1	
10	36GB	G:\MNT\BACKUP\21\		10	36GB	G:\MNT\BACKUP\22\	
11	36GB	NTFS Volume Backup21		11	36GB	NTFS Volume Backup22	
12	36GB	345 GB		12	36GB	345 GB	
13	36GB			13	36GB		
14	36GB			14	36GB		
15	36GB			15	36GB		
16	36GB			16	36GB		
17	36GB			17	36GB		
18	36GB			18	36GB		
19	36GB			19	36GB		
20	36GB			20	36GB		
21	36GB			21	36GB		
22	36GB			22	36GB		
23	36GB			23	36GB		
24	36GB			24	36GB		
25	Empty			25	Empty		

Smart Array P600 Controller #6		WINDOWS DISK ADMIN		**Smart Array P600 Controller #6**		WINDOWS DISK ADMIN	
MSA 70 Enclosure #3		Logical Disk 1		MSA 70 Enclosure #4		Logical Disk 1	
		Partitions (RAID 0): 122GB Disk				Partitions (RAID 0): 122GB Disk	
Disk ID	Physical Disk	1	2	Disk ID	Physical Disk	1	2
1	36GB	G:\MNT\CS23	G:\MNT\MISC23	1	36GB	G:\MNT\CS24	G:\MNT\MISC24
2	36GB	Raw	Raw	2	36GB	Raw	Raw
3	36GB	78.54GB	43.41GB	3	36GB	78.54GB	43.41GB
4	36GB			4	36GB		
5	36GB	Logical Disk 2		5	36GB	Logical Disk 2	
8	36GB	Partitions (RAID 1+0): 345GB		8	36GB	Partitions (RAID 1+0): 345GB	
9	36GB	1		9	36GB	1	
10	36GB	G:\MNT\BACKUP\23\		10	36GB	G:\MNT\BACKUP\24\	
11	36GB	NTFS Volume Backup23		11	36GB	NTFS Volume Backup24	
12	36GB	345 GB		12	36GB	345 GB	
13	36GB			13	36GB		
14	36GB			14	36GB		
15	36GB			15	36GB		
16	36GB			16	36GB		
17	36GB			17	36GB		
18	36GB			18	36GB		
19	36GB			19	36GB		
20	36GB			20	36GB		
21	36GB			21	36GB		
22	36GB			22	36GB		
23	36GB			23	36GB		
24	36GB			24	36GB		
25	Empty			25	Empty		

Table 2b: Log Distribution

HP 4GB, FC2143 Fibrechannel HBA			WINDOWS.NET DISK ADMIN		
1 MSA1000			DISK 1 (Dynamic)		
SCSI ID	Channels		Partitions (RAID 1+0 1676 GB)		
	0	1	0	1	2
0	300GB	300GB	(no drv ltr) Raw 10 MB (for proper alignment)	L: Raw 1623.04 GB	G: NTFS 50 GB
1	300GB	300GB			
2	300GB	300GB			
3	300GB	300GB			
4	300GB	300GB			
5	300GB	300GB			
8					

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	30,000
District	300,000
Customer	900,000,000
History	900,000,000
Orders	900,000,000
New Orders	270,000,000
Order Line	840,041,944
Stock	3,000,000,000
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 1162GB to sustain the log for 8 hours. Space available for the transaction log was 1676GB 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 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. cs_fg consists of 24 partitions at 80424 MB each and misc_fg consist of 24 partitions at 44451 MB each as shown in the createdb.sql. The log was configured with 20,000 MB at database creation, and was expanded to 1,200,000 MB after database creation and load.

Chapter 5 Performance Metrics and Response Time

5.1 Throughput

Measured tpmC® must be reported.

Measured TpmC®: 372,140
Price per TpmC®: $1.81 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	0.31s	0.50s	5.28s
Payment	0.28s	0.47s	4.41s
Order-Status	0.30s	0.50s	5.28s
Delivery (interactive portion)	0.11s	0.11s	2.67s
Delivery (deferred portion)	0.12s	0.18s	4.24s
Stock-Level	0.52s	0.77s	3.47s
Menu	0.11s	0.11s	2.69s

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	18.63s
Payment	3.00	3.02s	3.63s
Order Status	3.00	3.02s	3.58s
Interactive Delivery	3.00	3.02s	3.61s
Stock Level	3.00	3.02s	3.61s

Table 6: Transaction Think Times

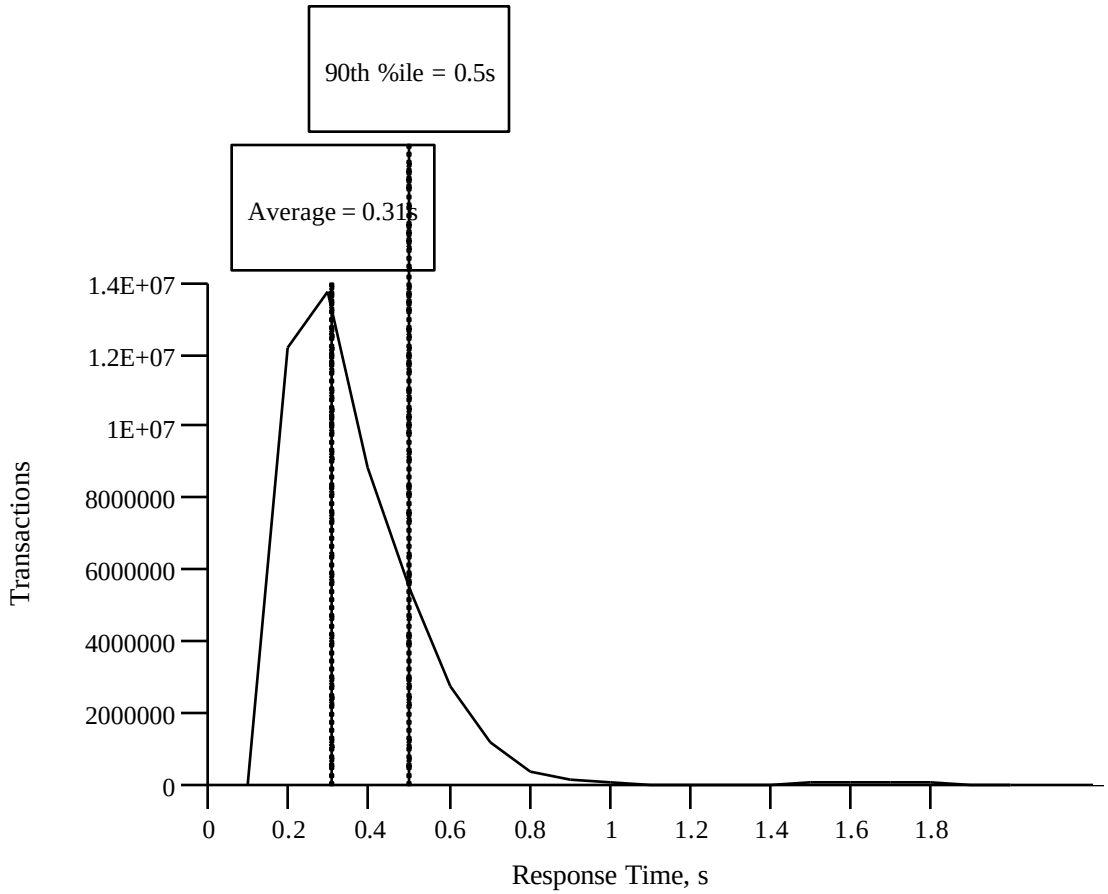
Think Times	Minimum	Average	Maximum
New Order	0	12.06s	120.55s
Payment	0	12.07s	120.54s
Order Status	0	10.07s	100.53s
Interactive Delivery	0	5.07s	50.53s
Stock Level	0	5.06s	50.53s

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

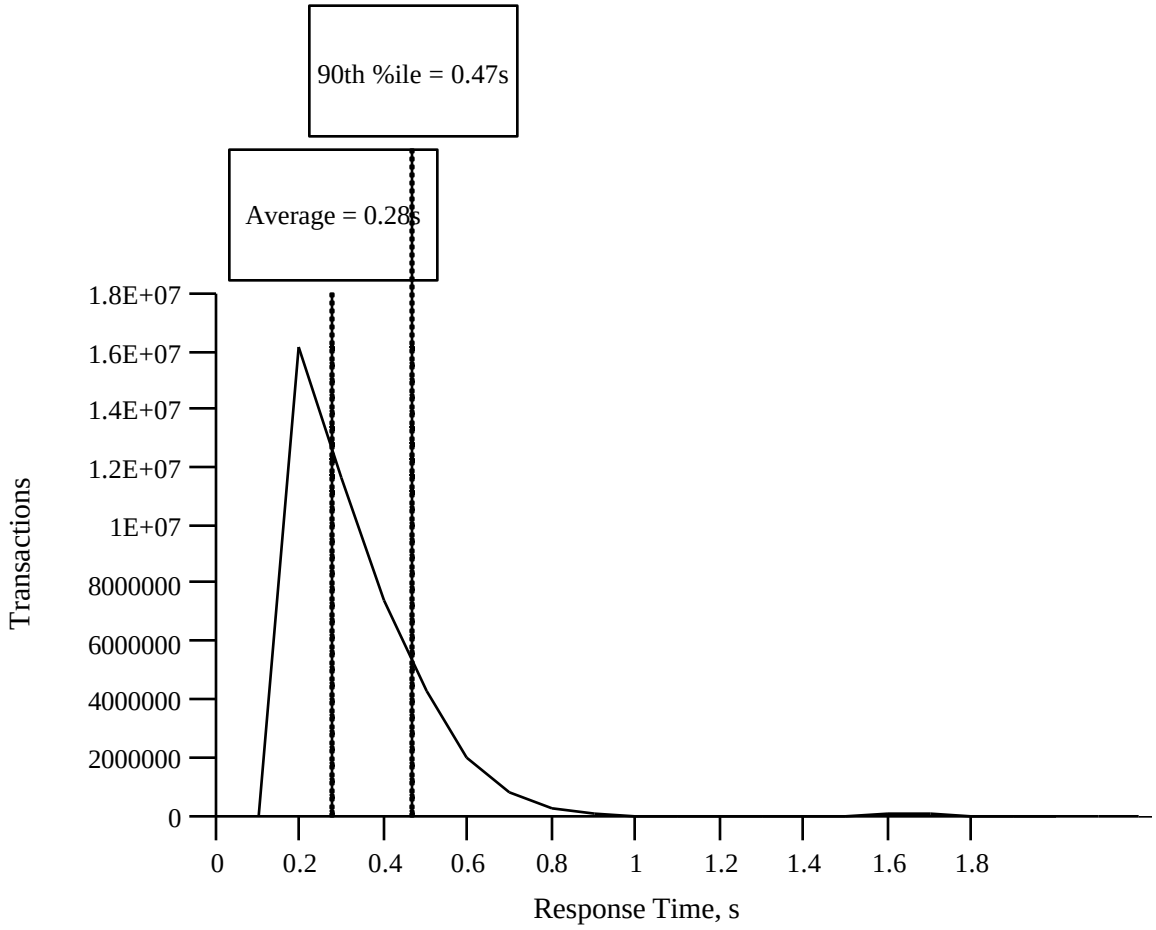
Figure 3: New Order Response Time Distribution



Response time frequency distribution for New Order transaction

5.4.2 Payment Response Time Distribution

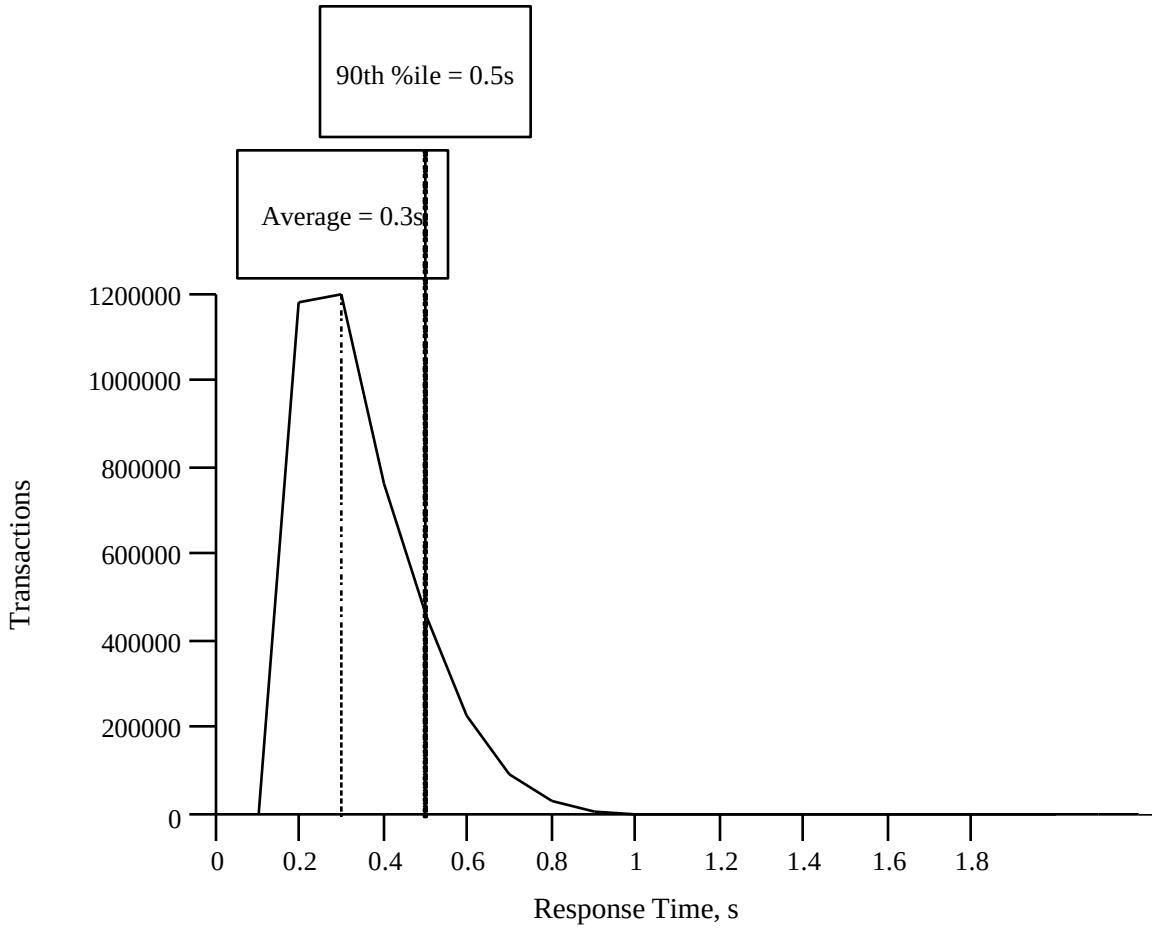
Figure 4: Payment Response Time Distribution



Response time frequency distribution for Payment transaction

5.4.3 Order Status Response Time

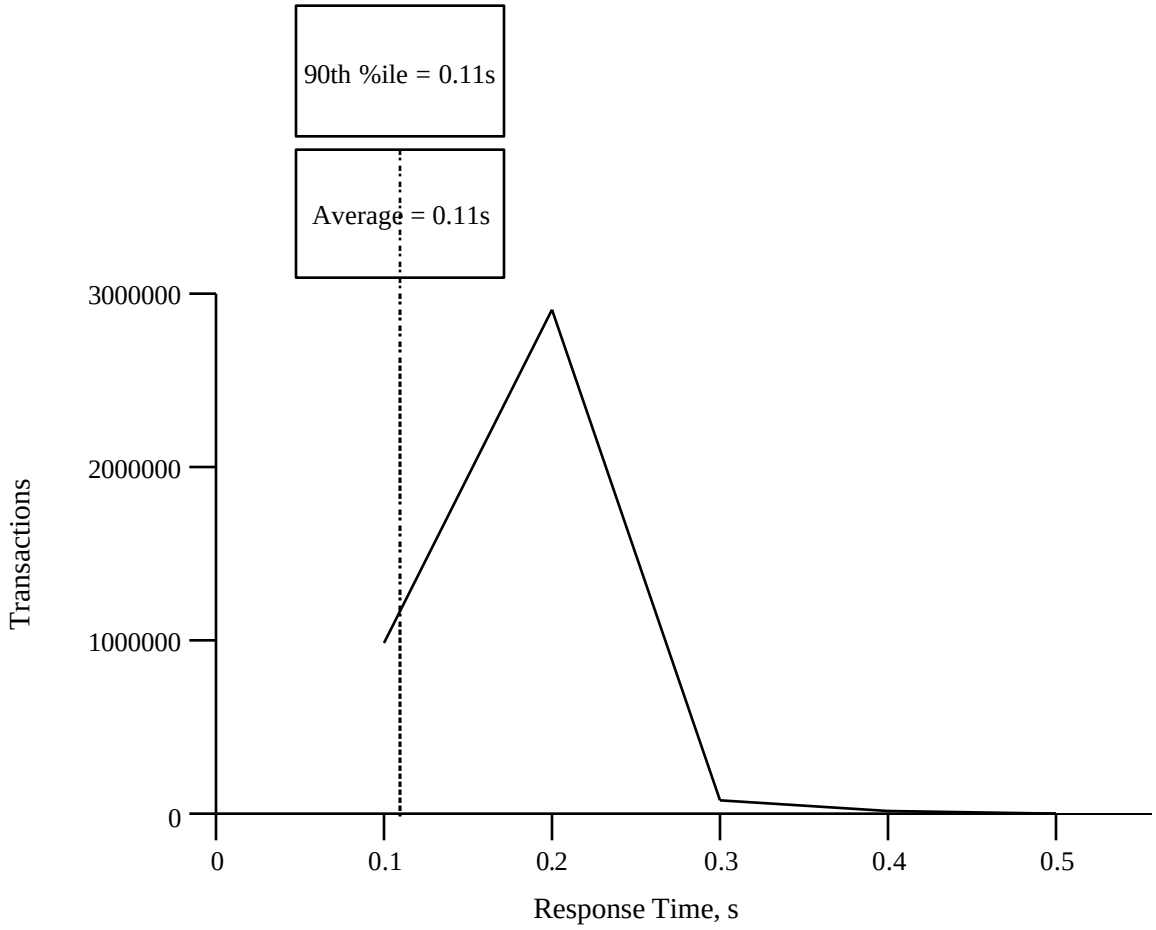
Figure 5: Order Status Response Time Distribution



Response time frequency distribution for Order Status transaction

5.4.4 Delivery Response Time Distribution

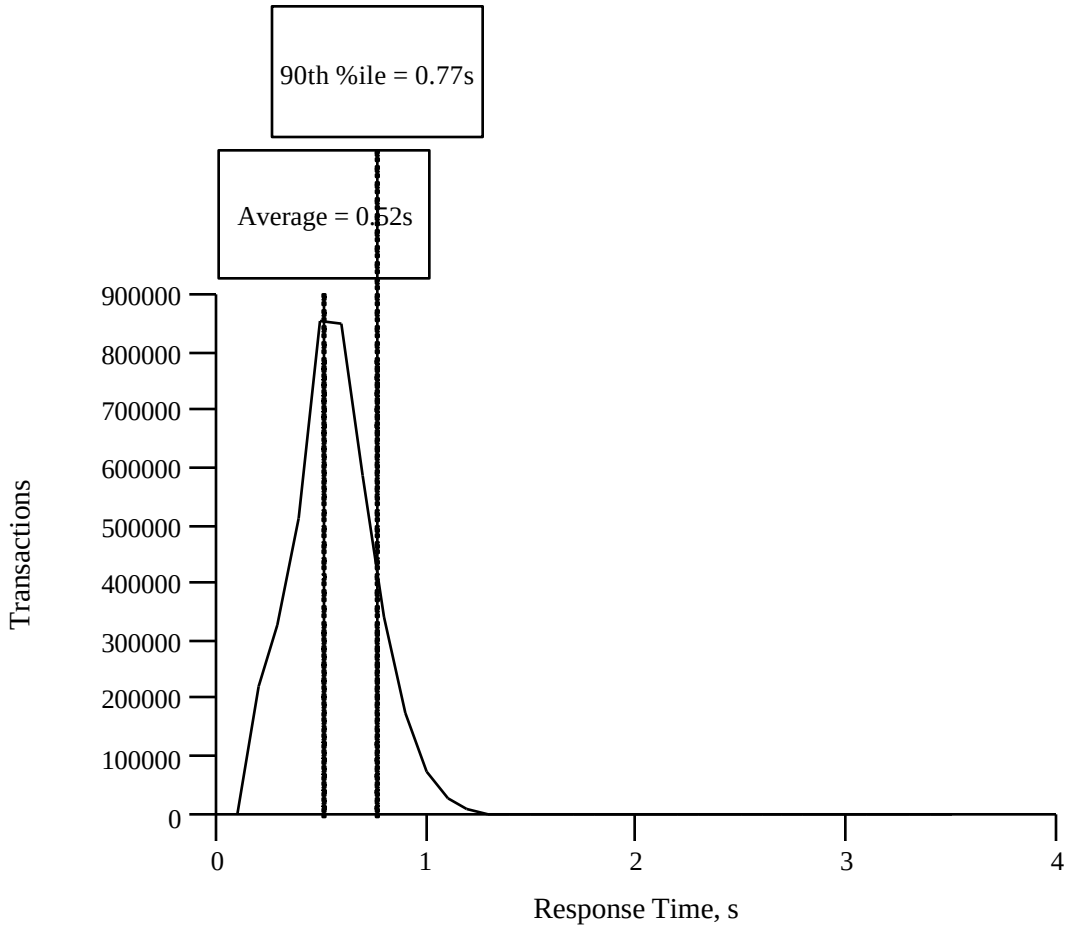
Figure 6: Delivery Response Time Distribution



Response time frequency distribution for Delivery transaction

5.4.5 Stock Level Response Time

Figure 7: Stock Level Response Time Distribution

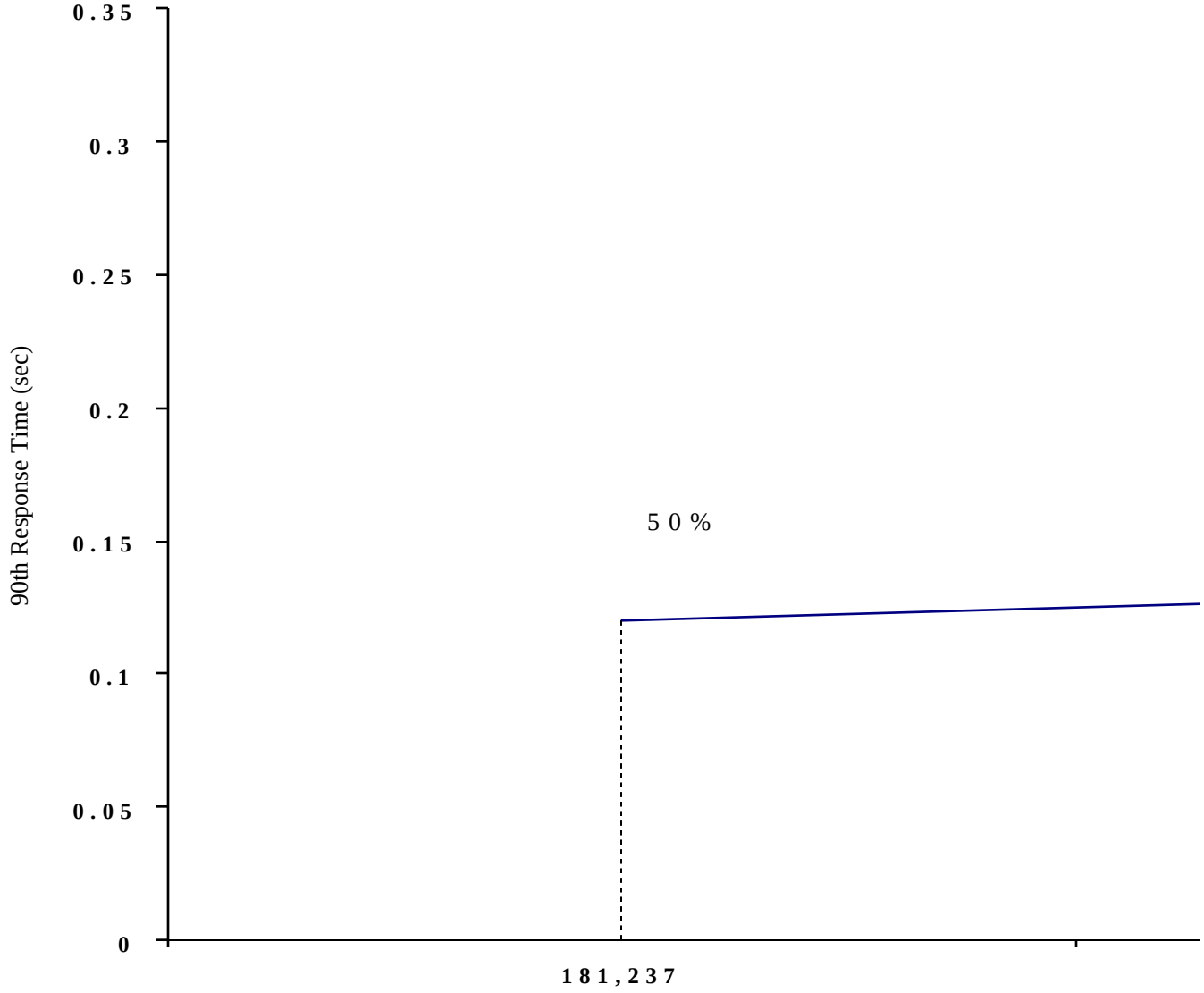


Response time frequency distribution for Stock Level transaction

5.4.6 Response Time Versus Throughput

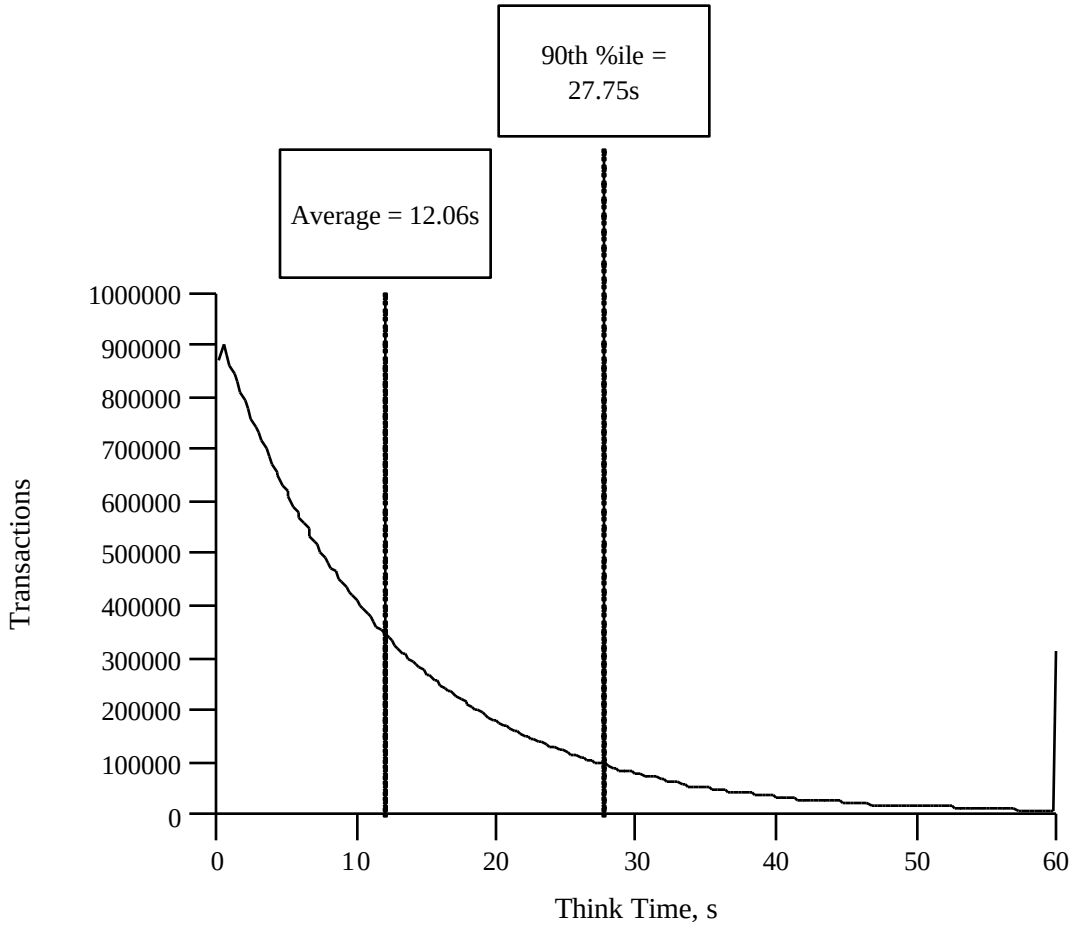
Figure 8: New Order Response Time Distribution

R



5.4.7 New Order Think Time Distribution

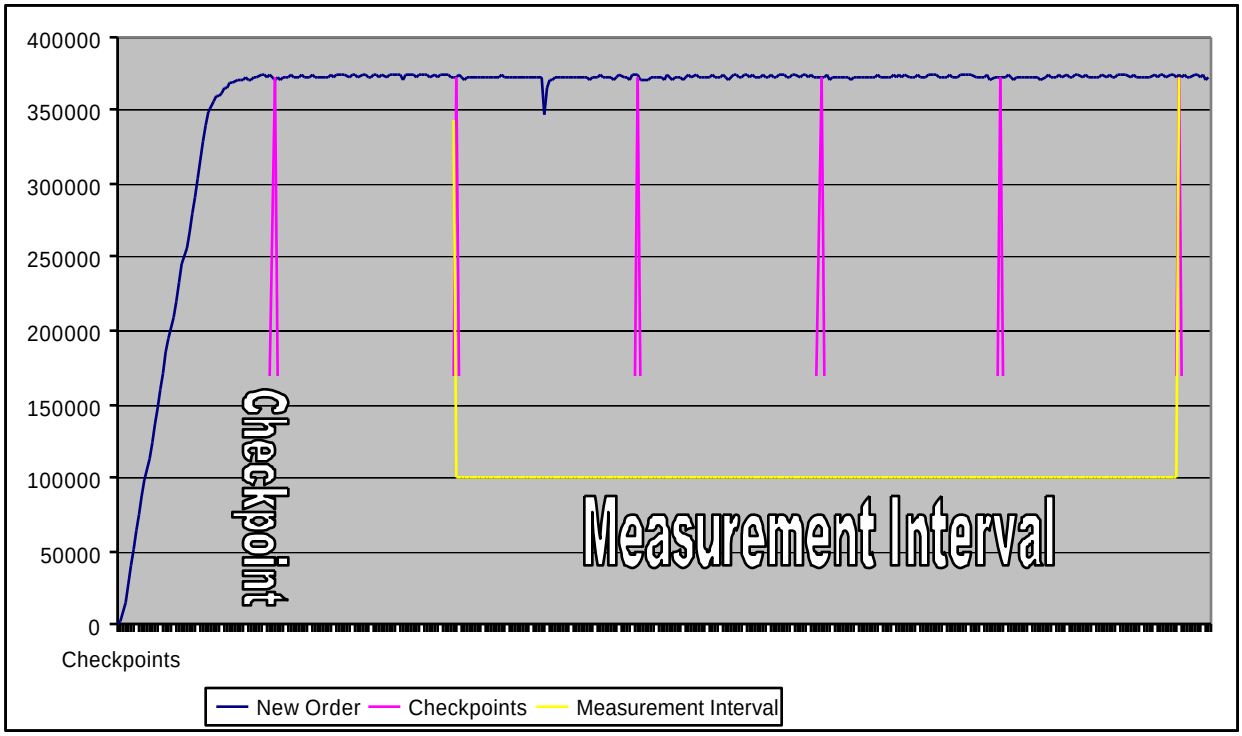
Figure 9: New Order Think Time Distribution



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 1780" syntax in Microsoft SQL Server 2005 Enterprise Itanium Edition was used to force the checkpoints to an interval of 29 minutes, 40 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 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 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	43.02%
Delivery	4.01%
Stock Level	4.01%
Order Status	4.00%

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 1 checkpoint before the measurement interval.

Table 8: Measurement Interval and Checkpoints

Event	From	To
Measured Interval	11:36:48	13:36:48
Checkpoint	11:06:55	11:36:35
Checkpoint	11:36:48	12:06:29
Checkpoint	12:06:36	12:36:16
Checkpoint	12:36:27	13:06:07
Checkpoint	13:06:15	13:35:55

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:	372,140 tpmC
Price per tpmC:	$1.81 USD per tpmC
Availability:	June 11, 2007

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 per-processor licenses.
- Microsoft Windows Server 2003, Datacenter edition (64-bit)
- 16 Microsoft Windows 2003 Server licenses.
- 1 Microsoft Visual C++ 32bit Edition.

- 3 year support for hardware components

7.5 Testing

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:

PERFORMANCE METRICS INC.
TPC Certified Auditors

June 8, 2007

Mr. Eric Deehr
Performance Engineer
Windows Integrity Engineering
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 rx6600
Database Manager:	Microsoft SQL Server 2005 Enterprise Itanium Edition
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 @ 1.6 Ghz	192 GB	12 @ 300 GB 578 @ 36 GB 2 @ 36 GB	0.50	**372,140**
16 Clients: ProLiant DL140 each with:				
2 Intel @ 3.06 Ghz	Main: 2 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 31,001 warehouses, of which 29,784 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 60day space calculation was verified.
- The Measured cycle times were confirmed to have the correct response time delays.
- There were 297,840 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 233 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.
- 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
         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(&DelBuffCritica l
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_N OITEMS_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>";

                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></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> </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> </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_BLOCK        *pECB, int iTermId, char *szBuffer)
{
                PNEW_ORDER_DATA
                pNewOrder;

                pNewOrder = Term.pClientData[iTermId].pTxn->BuffAddr_NewOrder();

                ZeroMemory(pNewOrder, sizeof(NEW_ORDER_DATA));
                pNewOrder->w_id = Term.pClientData[iTermId].w_id;
                GetNewOrderData(pECB->lpszQueryString, pNewOrder);

                Term.pClientData[iTermId].pTxn->NewOrder();

                pNewOrder = Term.pClientData[iTermId].pTxn->BuffAddr_NewOrder();
                MakeNewOrderForm(iTermId, pNewOrder, OUTPUT_FORM, szBuffer );
}

/* FUNCTION: void 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
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 lev el 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;

DWORD       // number of buffers free
                        dwDelBuffBusyIn dex
                = 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 );
			delete e;
			WriteMessageToEventLog( szTmp );
			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> <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>
</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_BLOCK *pECB, int iTermId, char *szBuffer)
{
		PPAYMENT_DATA
		pPayment;

		pPayment = Term.pClientData[iTermId].pTxn->BuffAddr_Payment();
		ZeroMemory(pPayment, sizeof(PAYMENT_DATA));
		pPayment->w_id = Term.pClientData[iTermId].w_id;
		GetPaymentData(pECB->lpszQueryString, pPayment);

		Term.pClientData[iTermId].pTxn->Payment();

		pPayment = Term.pClientData[iTermId].pTxn->BuffAddr_Payment();
		MakePaymentForm(iTermId, pPayment, OUTPUT_FORM, szBuffer);
}

/* FUNCTION: ProcessOrderStatusForm
 *
 * PURPOSE: This function gets and validates the input data from the Order Status
 *                                      form filling in the required input variables. It then calls the
 *
		SQLOrderStatus transaction, constructs the output form and writes it
 *                                      back to client browser.
 * ARGUMENTS:
		EXTENSION_CONTROL_BLOCK
		*pECB		passed in structure pointer from inetsrv.
 *
		int

		iTermId		client browser terminal id
 *
 */

void ProcessOrderStatusForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char *szBuffer)
{
		PORDER_STATUS_DATA
		pOrderStatus;

		pOrderStatus = Term.pClientData[iTermId].pTxn->BuffAddr_OrderStatus();
		ZeroMemory(pOrderStatus, sizeof(ORDER_STATUS_DATA));
		pOrderStatus->w_id = Term.pClientData[iTermId].w_id;
		GetOrderStatusData(pECB->lpszQueryString, pOrderStatus);

		Term.pClientData[iTermId].pTxn->OrderStatus();

		pOrderStatus = Term.pClientData[iTermId].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_BLOCK *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_BLOCK *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->dwNumberOfD eliveryThreads = 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
#define ERR_TYPE_TPCW_ENG_BASE  //error from TPC-W user class
                        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\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
		//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
```

```
#define ERR_TYPE_TPCE_CONN
// TPC-E error types
                        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
 * Copyright 1997 Microsoft Corp., All rights
reserved.
 *
 * Source code licensed to Tandem Computers
for Internal
 * use only.  Redistribution of source or object
files or
 * any derivative works is prohibited. By
agreement, this
 * notice may not be removed.
 *
 * Authors: Charles Levine, Philip Durr
 *
            Microsoft Corp.
 *
 */

//FILE: RTETIME.H

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

\common\txnlog\include\spinlock.h

```
/*          FILE: SPINLOCK.H
 *
 * Copyright 1997 Microsoft Corp., All rights
reserved.
 *
 * Source code licensed to Tandem Computers
for Internal
 * use only.  Redistribution of source or object
files or
 * any derivative works is prohibited. By
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 retur ned 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()
{
        DBDATETIME datetime;
        DBDATEREC daterec;

        int
        iTryCount = 0;
        const BYTE   *pData;

        ResetError();

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

        dbrpcparam(m_dbproc, NULL, 0,
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_dat e.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;
        DBDATETIME datetime;
        DBDATEREC daterec;

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

        ResetError();

        while (TRUE)
        {
                try
                {

        dbrpcinit(m_dbproc,
"tpcc_orderstatus", 0);


        dbrpcparam(m_dbproc, NULL, 0,
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>
#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\trans.h"
#include "..\..\common\src\txn_base.h"
#include "tpcc_odbc.h"

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

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_versio n,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_RE
TRIED_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::eAllocHand
le);

		m_hstmt = m_hstmtNewOrder;

		if ( SQLSetStmtAttrW( m_hstmt,
SQL_ATTR_APP_ROW_DESC,
m_descNewOrderCols1, 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.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::eBindPara
m);

		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::eBindPara
m);
		}

		// set the bind offset pointer
		if ( SQLSetStmtAttrW( m_hstmt,
SQL_ATTR_ROW_BIND_OFFSET_PTR,
&m_BindOffset, SQL_IS_POINTER ) !=
SQL_SUCCESS )

		ThrowErr or(CODBCERR::eSetStmtAt
tr);

		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::eSetStmtAt
tr);

		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_szNewOrderComman
d,
sizeof(m_szNewOrderCommand)/sizeof(m_szNew
OrderCommand[0]),
				// 0	1	2
				//
0123456789012345678901234567890
```

```
                                        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::eSetStmtAt
tr);

        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::eBindPara
m);

        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::eBindPara
m);
        }

        // 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::eSetStmtAt
tr);

        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::eSetStmtAt
tr);

        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_szNewOrderNoDuplic
atesCommand,
sizeof(m_szNewOrderNoDuplicatesCommand)/siz
eof(m_szNewOrderNoDuplicatesCommand[0]),
                                        L"{call
%stpcc_neworder_new(?,?,?,?,?,?,?,?,?,?,?,?,?,?,
?,?,?,?,?,?,?,?,?,?,?,?,"

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

        m_iBeginNewOrderNoDuplicatesVari
ablePart = 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



		 //
01234567890123456789012345678
		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 = m_iBeginNewOrderVariablePart
+ 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_RETRIED_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::eAllocHandle);

        m_hstmt = m_hstmtOrderStatus;

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

        ThrowError(CODBCERR::eSetStmtAttr);

        int i = 0;
        if (   SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT, SQL_C_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::eBindParam);
        // configure block cursor
        if (   SQLSetStmtAttrW(m_hstmt, SQL_ATTR_ROW_BIND_TYPE, (SQLPOINTER)sizeof(m_txn.OrderStatus.OL[0]), 0) != SQL_SUCCESS
                        || SQLSetStmtAttrW(m_hstmt, SQL_ATTR_ROWS_FETCHED_PTR, &m_RowsFetched, 0) != SQL_SUCCESS
                        )

        ThrowError(CODBCERR::eSetStmtAttr);

        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::eSetStmtAttr);

        i = 0;
        if (   SQLBindCol(m_hstmt, ++i, SQL_C_SLONG, &m_txn.OrderStatus.c_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR, &m_txn.OrderStatus.c_last, sizeof(m_txn.OrderStatus.c_last), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR, &m_txn.OrderStatus.c_first, sizeof(m_txn.OrderStatus.c_first), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR, &m_txn.OrderStatus.c_middle, sizeof(m_txn.OrderStatus.c_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_szOrderStatusCommand, sizeof(m_szOrderStatusCommand)/sizeof(m_szOrderStatusCommand[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::eSetStmtAttr);

        if (m_txn.OrderStatus.c_id != 0)

        m_txn.OrderStatus.c_last[0] = 0;

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

        ThrowError(CODBCERR::eSetStmtAttr);

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

        ThrowError(CODBCERR::eExecDirect);
```

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

                ThrowError(CODBCERR::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_szNewOrderNoDuplicatesCommand[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 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;
    m_InitProperties[2].colid          = DB_NULLID;
    //Password.
    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
        //char                  hr;

        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_InterfaceWithEr
ror)))
        {
                _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_pIStockLevelCommand, 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.cParamSets = 1;
        m_StockLevelExecuteParams.hAccessor = 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_pIStockLevelCommand, COLEDBERR::eExecute, "StockLevel()");
                        }

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

        ThrowError(m_pIStockLevelCommand, COLEDBERR::eGetNextRows, "StockLevel()");
                        }

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

        ThrowError(m_pIStockLevelCommand, 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_RETRIED_TRANS, iTryCount);
}

void CTPCC_OLEDB::InitNewOrderParams()
{
        int

        i, j, iOlCount;
        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[nOutputParams];
		DBBINDING
		acOutputDBBinding2[nOutputParams2];
		DBBINDSTATUS
		acOutputDBBindStatus2[nOutputParams2];

		// 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_pINewOrderComma
nd[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].cPar
amSets = 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].hAcc
essor = m_hNewOrderInputAccessor[j];

                m_NewOrderExecuteParams[j].pDat
a = &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[iHandleIndex],
                        NULL,
                        (IUnknown **)&pMultipleResults);
                if (FAILED(hr))
                {
        ThrowError(m_pINewOrderCommand[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_pINewOrderCommand[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_pINewOrderCommand[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_pINewOrderCommand[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_pINewOrderCommand[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_pINewOrderCommand[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_pINewOrderCommand[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_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_RETRIED_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[nOutputParams];

		// 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.cParamSets = 1;
		m_DeliveryExecuteParams.hAccessor = 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(rg hRow,
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 specif ic 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(IObjectC
ontrol)
        COM_INTERFACE_ENTRY(IObjectC
onstruct)
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_COMMAND_VALUE     202
#define _APS_NEXT_RESOURCE_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);
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("U
nhandled 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("U
nhandled 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("U
nhandled 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("Unhandled exception."));
                        pData->retval = ERR_TYPE_LOGIC;
                        pData->error = 0;
                        m_bCanBePooled = FALSE;
                        return E_FAIL;
                }
}

HRESULT CTPCC_Common::Payment(VARIANT txn_in, VARIANT* txn_out)
{
                PPAYMENT_DATA   pPayment;
                COM_DATA        *pData;
                try
                {
                        pData = (COM_DATA*)txn_in.parray->pvData;
                        pPayment = m_pTxn->BuffAddr_Payment();

                        memcpy(pPayment, &pData->u.Payment, sizeof(PAYMENT_DATA));

                        m_pTxn->Payment();
                        // do the actual txn

                        VariantInit(txn_out);
                        txn_out->vt = VT_SAFEARRAY;
                        txn_out->parray = SafeArrayCreateVector( VT_UI1,


                txn_in.parray->rgsabound->cElements,
                txn_in.parray->rgsabound->cElements);
                        pData = (COM_DATA*) txn_out->parray->pvData;

                        memcpy( &pData->u.Payment, pPayment, sizeof(PAYMENT_DATA));

                        pData->retval = ERR_SUCCESS;
                        pData->error = 0;
                        return S_OK;
                }
                catch (CBaseErr *e)
                {
                        // check for lost database connection; if yes, component is toast
                        if ( ((e->ErrorType() == ERR_TYPE_DBLIB) && (e->ErrorNum() == 10005)) ||
                                ((e->ErrorType() == ERR_TYPE_ODBC) && (e->ErrorNum() == 10054)) )

                m_bCanBePooled = FALSE;

                        pData->retval = e->ErrorType();
                        pData->error = e->ErrorNum();
                        delete e;
                        return E_FAIL;
                }
                catch (...)
                {

                WriteMessageToEventLog(TEXT("Unhandled exception."));
                        pData->retval = ERR_TYPE_LOGIC;
                        pData->error = 0;
                        m_bCanBePooled = FALSE;
                        return E_FAIL;
                }
}

HRESULT CTPCC_Common::StockLevel(VARIANT txn_in, VARIANT* txn_out)
{
                PSTOCK_LEVEL_DATA
                pStockLevel;
                COM_DATA
                *pData;

                try
                {
                        pData = (COM_DATA*)txn_in.parray->pvData;
                        pStockLevel = m_pTxn->BuffAddr_StockLevel();

                        memcpy(pStockLevel, &pData->u.StockLevel, sizeof(STOCK_LEVEL_DATA));

                        m_pTxn->StockLevel();

                        VariantInit(txn_out);
                        txn_out->vt = VT_SAFEARRAY;
                        txn_out->parray = SafeArrayCreateVector( VT_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("U
nhandled 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 OrderStatus;
interface NewOrder;
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 <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"
#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 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( 0xffffffd2 ),   /*
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,
                        /* 0 */
/* 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( 0xfffffffe0 ),    /*
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( 0xfffffffe4 ),    /*
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( 0xfffffff1 ),   /*
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,
/* 732 */      NdrFcShort( 0xfffffe8 ),    /*
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,
                           /* FC_LONG */
/* 768 */      0x8,                    /*
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,
                           /* FC_PAD */
/* 816 */
                                       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( 0xffffffee ),   /*
Offset= -18 (860) */
/* 880 */      0x5c,                       /*
FC_PAD */
                                0x5b,
                        /* FC_END */
/* 882 */
                                0x1a,
                        /*
FC_BOGUS_STRUCT */
                                0x3,
                        /* 3 */
/* 884 */      NdrFcShort( 0x28 ),         /* 40 */
/* 886 */      NdrFcShort( 0xffffffee ),   /*
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,
                        /* FC_PAD */
/* 912 */
                                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( 0xffffffd8c ),  /*
Offset= -628 (302) */
/* 932 */
                                0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 934 */      NdrFcShort( 0xffffffd8e ),  /*
Offset= -626 (308) */
/* 936 */
                                0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 938 */      NdrFcShort( 0xffffffda2 ),  /*
Offset= -606 (332) */
/* 940 */
                                0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 942 */      NdrFcShort( 0xffffffdb0 ),  /*
Offset= -592 (350) */
/* 944 */
                                0x12,
0x10,          /* FC_UP [pointer_deref] */
/* 946 */      NdrFcShort( 0xffffffdbe ),  /*
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( 0xfffffff4 ),   /*
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( 0xfffffc28 ),   /*
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( 0xfffffc18 ),   /*
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( 0xfffffff4 ),   /*
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 /* !def ined(_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,
                        /* 3 */
/* 60 */        0xa,                        /* 10 */
                                        0x7,
                        /* Ext Flags:  new
corr desc, clt corr check, srv corr check, */
/* 62 */        NdrFcShort( 0x20 ),         /* 32 */
/* 64 */        NdrFcShort( 0x20 ),         /* 32 */
/* 66 */        NdrFcShort( 0x0 ),          /* 0 */
/* 68 */        NdrFcShort( 0x0 ),          /* 0 */

                /* Parameter txn_in */

/* 70 */        NdrFcShort( 0x8b ),         /* Flags:
must size, must free, in, by val, */
/* 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 ),          /* 8 */
/* 234 */   0x44,                       /* Oi2
Flags:  has return, has ext, */
                                        0x1,
                        /* 1 */
/* 236 */   0xa,                        /* 10 */
                                        0x1,
                        /* Ext Flags:  new
corr desc, */
/* 238 */   NdrFcShort( 0x0 ),          /* 0 */
/* 240 */   NdrFcShort( 0x0 ),          /* 0 */
/* 242 */   NdrFcShort( 0x0 ),          /* 0 */
/* 244 */   NdrFcShort( 0x0 ),          /* 0 */

            /* Return value */

/* 246 */   NdrFcShort( 0x70 ),         /* Flags:
out, return, base type, */
/* 248 */   NdrFcShort( 0x8 ),          /* ia64
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( 0x8 ),           /* 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 ),          /*
/* 592 */      0x8,                        /*
Offset= 6 (598) */
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( 0xfffffffda ),  /*
Offset= -38 (630) */
/* 670 */      0x5c,                       /*
FC_PAD */
                                           0x5b,
                                 /* FC_END */
/* 672 */
                                           0x1a,
                                 /*
FC_BOGUS_STRUCT */
                                           0x3,
                                 /* 3 */
/* 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( 0xffffff1 ),    /*
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( 0xfffffe7 ),    /*
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( 0xfffffff6 ),   /*
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 */
/* 772 */      NdrFcShort( 0x6 ),      /*
Offset= 6 (778) */
/* 774 */      0x8,                    /*
FC_LONG */
                                       0x40,
                           /* FC_STRUCTPAD4
*/
/* 776 */      0x36,                   /*
FC_POINTER */
                                       0x5b,
                           /* FC_END */
/* 778 */
                                       0x12,
0x0,           /* FC_UP */
/* 780 */      NdrFcShort( 0xfffffff6 ),   /*
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( 0xfffffff6 ),   /*
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( 0xfffffff6 ),   /*
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 */
                                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,
/* 896 */               /* FC_PAD */
                                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( 0xffffffd4 ),   /*
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( 0xfffffc3c ),   /*
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( 0xfffffc2c ),   /*
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( 0xffffffd4 ),   /*
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,
    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) = "dbopt1.log"
LogFileArray(5) = "idxordcl.log"
LogFileArray(6) = "idxitmcl.log"
LogFileArray(7) = "idxwarcl.log"
LogFileArray(8) = "idxcuscl.log"
LogFileArray(9) = "idxnodcl.log"
LogFileArray(10) = "idxdiscl.log"
LogFileArray(11) = "idxstkcl.log"
LogFileArray(12) = "idxodlcl.log"
LogFileArray(13) = "idxcusnc.log"
LogFileArray(14) = "idxhiscl.log"
LogFileArray(15) = "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
wScript.Sleep 100
Loop
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, 200 1, 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
#define USER"tpcc"
            "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 DIST_INFO_LEN            24
        #define MAX_OL_NEW_ORDER_ITEMS
15
        #define
MAX_OL_ORDER_STATUS_ITEMS  15
        #define STATUS_LEN               25
        #define OL_DIST_INFO_LEN
          24
        #define C_SINCE_LEN
                  23
        #define H_DATE_LEN
                  23
        #define OL_DELIVERY_D_LEN
          23
        #define O_ENTRY_D_LEN            23


// Functions in random.c
void    seed();
long    irand();
double  drand();
void    WUCreate();
short   WURand();
long    RandomNumber(long lower, 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    InitStrings();
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
#define MAXITEMS_SCALE_DOWN
        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;
                    // for HISTORY
HDBC    o_hdbc1;
                    // for ORDERS
HDBC    o_hdbc2;
                    // for NEW-ORDER

HDBC    o_hdbc3;
                    // for ORDER-LINE

HSTMT   v_hstmt;
                    // for SQL Server version
verification
HSTMT   i_hstmt1;
HSTMT   w_hstmt1;
HSTMT   c_hstmt1, c_hstmt2;
HSTMT   o_hstmt1, o_hstmt2, o_hstmt3;

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
long    main_time_end;          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");

        if (aptr->scale_down == 1)
        // set database scale values
        {
                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;
                long            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, "wareh ouse",
&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            time_start;
                long            w_id;
                RETCODE         rc;
                DBINT           rcint;
                char            bcphint[128];
                char            err_log_path[256];

                // Seed with unique number
                seed(4);

                printf("Loading district table...\n");

                // build index before load
                if ((aptr->build_index == 1) && (aptr->index_order == 1))
                                BuildIndex("idxdiscl");

                InitString(d_name, D_NAME_LEN+1);
                InitAddress(d_street_1, d_street_2, d_city, d_state, d_zip);
                sprintf(name, "%s..%s", aptr->database, "district");

                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)
                        HandleErrorDBC(c_hdbc1);
    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;                 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].ol_delivery_d);


					}
					else
```

```
                                        {

                orders_buf[o_id].o_ol[ol].ol_amount =
RandomNumber(1,999999)/100.0;

                // Added to insure ol_delivery_d set
properly during load


                // odbc datetime format

                strcpy(orders_buf[o_id].o_ol[ol].ol_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];
                char
                szDriverStringOut[1024];
                SQLSMALLINT
                cbDriverStringOut;


                SQLAllocHandle(SQL_HANDLE_ENV,
SQL_NULL_HANDLE, &henv );

                SQLSetEnvAttr(henv,
SQL_ATTR_ODBC_VERSION, (void*)SQL_OV_ODBC3,
0 );

                SQLAllocHandle(SQL_HANDLE_DBC,
henv , &i_hdbc1);
                SQLAllocHandle(SQL_HANDLE_DBC,
henv , &w_hdbc1);
                SQLAllocHandle(SQL_HANDLE_DBC,
henv , &c_hdbc1);
                SQLAllocHandle(SQL_HANDLE_DBC,
henv , &c_hdbc2);
                SQLAllocHandle(SQL_HANDLE_DBC,
henv , &o_hdbc1);
                SQLAllocHandle(SQL_HANDLE_DBC,
henv , &o_hdbc2);

                SQLAllocHandle(SQL_HANDLE_DBC,
henv , &o_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, apt r->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("\n Error 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;

                memset(zip, ' ', ZIP_LEN+1);
    zip[ZIP_LEN+1] = 0;
}


//================================
================================
======
//
// Function name: PaddString
//
//================================
================================
======

void PaddString(int max, char *name)
{
                int                             len;

                len = strlen(name);
                if ( len < max )
                                memset(name+len, ' ', max
- len);
                name[max] = 0;

                return;
}
```

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
GO
sp_configure 'allow updates',0

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:\tpcc31001.mdf",
                SIZE                        = 8MB,
                FILEGROWTH                  = 0),

FILEGROUP   cs_fg
                (NAME=cs1,
FILENAME="g:\mnt\build\cs\1\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs2,
FILENAME="g:\mnt\build\cs\2\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs3,
FILENAME="g:\mnt\build\cs\3\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs4,
FILENAME="g:\mnt\build\cs\4\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs5,
FILENAME="g:\mnt\build\cs\5\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs6,
FILENAME="g:\mnt\build\cs\6\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs7,
FILENAME="g:\mnt\build\cs\7\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs8,
FILENAME="g:\mnt\build\cs\8\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs9,
FILENAME="g:\mnt\build\cs\9\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs10,
FILENAME="g:\mnt\build\cs\10\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs11,
FILENAME="g:\mnt\build\cs\11\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs12,
FILENAME="g:\mnt\build\cs\12\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs13,
FILENAME="g:\mnt\build\cs\13\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs14,
FILENAME="g:\mnt\build\cs\14\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs15,
FILENAME="g:\mnt\build\cs\15\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs16,
FILENAME="g:\mnt\build\cs\16\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs17,
FILENAME="g:\mnt\build\cs\17\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs18,
FILENAME="g:\mnt\build\cs\18\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs19,
FILENAME="g:\mnt\build\cs\19\",
SIZE=80000MB,FILEGROWTH=0),
                (NAME=cs20,
FILENAME="g:\mnt\build\cs\20\",
SIZE=80000MB,FILEGROWTH=0),
```

```
            (NAME=cs21,
FILENAME="g:\mnt\build\cs\21\",
SIZE=80000MB,FILEGROWTH=0),
            (NAME=cs22,
FILENAME="g:\mnt\build\cs\22\",
SIZE=80000MB,FILEGROWTH=0),
            (NAME=cs23,
FILENAME="g:\mnt\build\cs\23\",
SIZE=80000MB,FILEGROWTH=0),
            (NAME=cs24,
FILENAME="g:\mnt\build\cs\24\",
SIZE=80000MB,FILEGROWTH=0),


FILEGROUP   misc_fg
            (NAME=misc1,
FILENAME="g:\mnt\build\misc\1\",SIZE=44000MB,FIL
EGROWTH=0),
            (NAME=misc2,
FILENAME="g:\mnt\build\misc\2\",SIZE=44000MB,FIL
EGROWTH=0),
            (NAME=misc3,
FILENAME="g:\mnt\build\misc\3\",SIZE=44000MB,FIL
EGROWTH=0),
            (NAME=misc4,
FILENAME="g:\mnt\build\misc\4\",SIZE=44000MB,FIL
EGROWTH=0),
            (NAME=misc5,
FILENAME="g:\mnt\build\misc\5\",SIZE=44000MB,FIL
EGROWTH=0),
            (NAME=misc6,
FILENAME="g:\mnt\build\misc\6\",SIZE=44000MB,FIL
EGROWTH=0),
            (NAME=misc7,
FILENAME="g:\mnt\build\misc\7\",SIZE=44000MB,FIL
EGROWTH=0),
            (NAME=misc8,
FILENAME="g:\mnt\build\misc\8\",SIZE=44000MB,FIL
EGROWTH=0),
            (NAME=misc9,
FILENAME="g:\mnt\build\misc\9\",SIZE=44000MB,FIL
EGROWTH=0),
            (NAME=misc10,
FILENAME="g:\mnt\build\misc\10\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc11,
FILENAME="g:\mnt\build\misc\11\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc12,
FILENAME="g:\mnt\build\misc\12\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc13,
FILENAME="g:\mnt\build\misc\13\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc14,
FILENAME="g:\mnt\build\misc\14\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc15,
FILENAME="g:\mnt\build\misc\15\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc16,
FILENAME="g:\mnt\build\misc\16\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc17,
FILENAME="g:\mnt\build\misc\17\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc18,
FILENAME="g:\mnt\build\misc\18\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc19,
FILENAME="g:\mnt\build\misc\19\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc20,
FILENAME="g:\mnt\build\misc\20\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc21,
FILENAME="g:\mnt\build\misc\21\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc22,
FILENAME="g:\mnt\build\misc\22\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc23,
FILENAME="g:\mnt\build\misc\23\",SIZE=44000MB,FI
LEGROWTH=0),
            (NAME=misc24,
FILENAME="g:\mnt\build\misc\24\",SIZE=44000MB,FI
LEGROWTH=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,
            c_credit,
            @o_entry_d,
            @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_d_id      = @d_id AND
              c_w_id      = @w_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,
        @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_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
GO
SET QUOTED_IDENTIFIER OFF

SET ANSI_NULLS ON
GO
```

Appendix C Tunable Parameters

Disabled Windows Services

.NET Runtime Optimization Service
Alerter
Application Experience Lookup Service
Application Management
Automatic Updates
ClipBook
COM+ System Application
Computer Browser
Distributed Link Tracking Server
Emulex HBAnyware
Emulex HBAnyware Discovery
Emulex HBAnyware SvcMgr
Error Reporting Service
Human Interface Device Access
Help and Support
IMAPI CD-Burning COM Service
Indexing Service
Intersite Messaging
IPSec Services
Kerberos Key Distribution Center
License Logging Service
Messenger
Netmeeting Remote Desktop Sharing
Network DDE
Network DDE DSDM
Print Spooler
Remote Registry
Routing and Remote Access
Secondary Logon
SNMP Service
SNMP Trap Servide
SQLServer Active Directory Helper
SQL Server Browser
SQL Server Full Text Search
Task Scheduler
Terminal Services Session Directory
Themes
WebClient
Windows Audio
Windows Firewall/Internet Connection Sharing (ICS)
Windows Image Acquisition
Wireless Configuration

Server System Configuration

System Information report written at: 06/08/07 12:29:59
System Name: SQLSAPPHIRE
[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 SQLSAPPHIRE

System Manufacturer hp
System Model server rx6600

System Type Itanium (TM) -based System

Processor ia64 Family 32 Model 0 Stepping 5 GenuineIntel ~1595 Mhz
Processor ia64 Family 32 Model 0 Stepping 5 GenuineIntel ~1595 Mhz
Processor ia64 Family 32 Model 0 Stepping 5 GenuineIntel ~1595 Mhz
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Processor ia64 Family 32 Model 0 Stepping 5 GenuineIntel ~1595 Mhz
Processor ia64 Family 32 Model 0 Stepping 5 GenuineIntel ~1595 Mhz
BIOS Version/Date HP 02.03, 11/29/2006

SMBIOS Version 2.3
Windows Directory C:\windows
System Directory C:\windows\system32

Boot Device \Device\HarddiskVolume98
Locale United States
Hardware Abstraction Layer Version = "5.2.3790.2781 (srv03_sp1_qfe.060830-0223)"

User Name Not Available
Time Zone Pacific Daylight Time
Total Physical Memory 196,577.18 MB

Available Physical Memory 184.85 GB
Total Virtual Memory 187.19 GB
Available Virtual Memory 186.82 GB
Page File Space 2.00 GB
Page File C:\pagefile.sys

[Hardware Resources]

[Conflicts/Sharing]

Resource Device
I/O Port 0x00000000-0x00001FFF PCI bus
I/O Port 0x00000000-0x00001FFF PCI bus
I/O Port 0x00000000-0x00001FFF PCI bus
I/O Port 0x00000000-0x00001FFF PCI bus
I/O Port 0x00000000-0x00001FFF PCI bus
I/O Port 0x00000000-0x00001FFF PCI bus
I/O Port 0x00000000-0x00001FFF PCI bus

I/O Port 0x00002000-0x00003FFF PCI bus
I/O Port 0x00002000-0x00003FFF Smart Array P600 Controller (Non-Miniport)
I/O Port 0x00006000-0x00007FFF PCI bus
I/O Port 0x00006000-0x00007FFF Smart Array P600 Controller (Non-Miniport)
I/O Port 0x0000E000-0x0000FFFF PCI bus
I/O Port 0x0000E000-0x0000FFFF Smart Array P600 Controller (Non-Miniport)
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
Memory Address 0xFF5E2000-0xFF5E2007 PCI bus
Memory Address 0xFF5E2000-0xFF5E2007 Communications Port (COM2)

I/O Port 0x00004000-0x00005FFF PCI bus
I/O Port 0x00004000-0x00005FFF Smart Array P600 Controller (Non-Miniport)
I/O Port 0x0000C000-0x0000DFFF PCI bus
I/O Port 0x0000C000-0x0000DFFF Smart Array P600 Controller (Non-Miniport)
I/O Port 0x00008000-0x00009FFF PCI bus
I/O Port 0x00008000-0x00009FFF Smart Array P600 Controller

[DMA]

Resource Device Status

[Forced Hardware]

Device PNP Device ID

[I/O]

Resource Device Status

0x00000000-0x00001FFF PCI bus OK

0x00000000-0x00001FFF PCI bus OK

0x00000000-0x00001FFF PCI bus OK

0x00000000-0x00001FFF PCI bus OK

0x00000000-0x00001FFF PCI bus OK

0x00000000-0x00001FFF PCI bus OK

0x00000000-0x00001FFF PCI bus OK

0x00000000-0x00001FFF PCI bus OK

0x00000000-0x00001FFF PCI bus OK

0x00001000-0x000010FF RADEON 7000 SERIES OK
0x000003B0-0x000003BB RADEON 7000 SERIES OK
0x000003C0-0x000003DF RADEON 7000 SERIES OK
0x00002000-0x00003FFF PCI bus OK

0x00002000-0x00003FFF Smart Array P600 Controller (Non-Miniport) OK
0x00002140-0x0000217F Intel(R) PRO/1000 MT Dual Port Server Adapter #3 OK

0x00002100-0x0000213F Intel(R) PRO/1000 MT Dual Port Server Adapter #4 OK

0x00004000-0x00005FFF PCI bus OK

0x00004000-0x00005FFF Smart Array P600 Controller (Non-Miniport) OK
0x00006000-0x00007FFF PCI bus OK

0x00006000-0x00007FFF Smart Array P600 Controller (Non-Miniport) OK
0x00008000-0x00009FFF PCI bus OK

0x00008000-0x00009FFF Smart Array P600 Controller OK
0x0000A000-0x0000BFFF PCI bus OK

0x0000A100-0x0000A1FF Smart Array P600 Controller (Non-Miniport) OK
0x0000C000-0x0000DFFF PCI bus OK

0x0000C000-0x0000DFFF Smart Array P600 Controller (Non-Miniport) OK
0x0000E000-0x0000FFFF PCI bus OK

0x0000E000-0x0000FFFF Smart Array P600 Controller (Non-Miniport) OK

[IRQs]

Resource Device Status
IRQ 25 Microsoft ACPI-Compliant System OK
IRQ 20 RADEON 7000 SERIES OK

IRQ 24 Communications Port (COM2) OK
IRQ 27 Smart Array P600 Controller (Non-Miniport) OK
IRQ 31 Intel(R) PRO/1000 MT Dual Port Server Adapter #3 OK
IRQ 32 Intel(R) PRO/1000 MT Dual Port Server Adapter #4 OK
IRQ 38 Smart Array P600 Controller (Non-Miniport) OK
IRQ 49 Smart Array P600 Controller (Non-Miniport) OK
IRQ 60 Smart Array P600 Controller OK
IRQ 71 Smart Array P600 Controller (Non-Miniport) OK
IRQ 75 Emulex LightPulse FC2143, PCI Slot 8, Storport Miniport Driver OK
IRQ 82 Smart Array P600 Controller (Non-Miniport) OK
IRQ 93 Smart Array P600 Controller (Non-Miniport) OK

[Memory]

Resource Device Status
0xFF5BC000-0xFF5BC003 HP Baseboard Management Controller Interface Device OK

0xA0000-0xFFFFF PCI bus OK

0xA0000-0xFFFFF RADEON 7000 SERIES OK
0x80000000-0x8FFFFFFF PCI bus OK

0x80000000-0x8FFFFFFF RADEON 7000 SERIES OK
0xFF5E2000-0xFF5E2007 PCI bus OK

0xFF5E2000-0xFF5E2007 Communications Port (COM2) OK
0x84034000-0x84034FFF HP Management Shared Memory Device OK
0x84033000-0x84033FFF HP Management Processor OK
0x84032000-0x84032FFF NEC PCI to USB Open Host Controller OK
0x84031000-0x84031FFF NEC PCI to USB Open Host Controller OK
0x84030000-0x840300FF Standard Enhanced PCI to USB Host Controller OK
0x84020000-0x8402FFFF RADEON 7000 SERIES OK
0x90000000-0x9FFFFFFF PCI bus OK

0x901C0000-0x901C1FFF Smart Array P600 Controller (Non-Miniport) OK
0x90140000-0x9017FFFF Smart Array P600 Controller (Non-Miniport) OK
0x901A0000-0x901BFFFF Intel(R) PRO/1000 MT Dual Port Server Adapter #3 OK

0x900C0000-0x900FFFFF Intel(R) PRO/1000 MT Dual Port Server Adapter #3 OK

0x90180000-0x9019FFFF Intel(R) PRO/1000 MT Dual Port Server Adapter #4 OK

0x90040000-0x9007FFFF Intel(R) PRO/1000 MT Dual Port Server Adapter #4 OK

0xA0000000-0xAFFFFFFF PCI bus OK

0xA0080000-0xA0081FFF Smart Array P600 Controller (Non-Miniport) OK
0xA0040000-0xA007FFFF Smart Array P600 Controller (Non-Miniport) OK
0xB0000000-0xBFFFFFFF PCI bus OK

0xB0080000-0xB0081FFF Smart Array P600 Controller (Non-Miniport) OK
0xB0040000-0xB007FFFF Smart Array P600 Controller (Non-Miniport) OK
0xC0000000-0xCFFFFFFF PCI bus OK

0xC0080000-0xC0081FFF Smart Array P600 Controller OK
0xC0040000-0xC007FFFF Smart Array P600 Controller OK
0xD0000000-0xDFFFFFFF PCI bus OK

0xD00C0000-0xD00C1FFF Smart Array P600 Controller (Non-Miniport) OK
0xD0080000-0xD00BFFFF Smart Array P600 Controller (Non-Miniport) OK
0xD00C3000-0xD00C3FFF Emulex LightPulse FC2143, PCI Slot 8, Storport Miniport Driver OK
0xD00C2000-0xD00C20FF Emulex LightPulse FC2143, PCI Slot 8, Storport Miniport Driver OK
0xE0000000-0xEFFFFFFF PCI bus OK

0xE0080000-0xE0081FFF Smart Array P600 Controller (Non-Miniport) OK
0xE0040000-0xE007FFFF Smart Array P600 Controller (Non-Miniport) OK
0xF0000000-0xFDFFFFFF PCI bus OK

0xF0080000-0xF0081FFF Smart Array P600 Controller (Non-Miniport) OK
0xF0040000-0xF007FFFF Smart Array P600 Controller (Non-Miniport) OK

[Components]

[Multimedia]

[Audio Codecs]

CODEC Manufacturer Description Status
File Version Size
Creation Date
c:\windows\system32\tssoft32.acm DSP GROUP, INC. tssoft32.acm OK
C:\windows\system32\TSSOFT32.ACM 1.01 29.00 KB (29,696 bytes) 3/25/2005 4:00 AM
c:\windows\system32\msg711.acm Microsoft Corporation msg711.acm OK
C:\windows\system32\MSG711.ACM 5.2.3790.0 (srv03_rtm.030324-2048) 33.00 KB (33,792 bytes) 3/25/2005 4:00 AM
c:\windows\system32\msadp32.acm Microsoft Corporation msadp32.acm OK
C:\windows\system32\MSADP32.ACM 5.2.3790.0 (srv03_rtm.030324-2048) 49.00 KB (50,176 bytes) 3/25/2005 4:00 AM
c:\windows\system32\imaadp32.acm Microsoft Corporation imaadp32.acm OK
C:\windows\system32\IMAADP32.ACM 5.2.3790.0 (srv03_rtm.030324-2048) 55.00 KB (56,320 bytes) 3/25/2005 4:00 AM

c:\windows\system32\msgsm32.acm
Microsoft Corporation
msgsm32.acm OK
C:\windows\system32\MSGSM32.ACM 5.2.3790.0 (srv03_rtm.030324-2048) 66.50 KB (68,096 bytes)
3/25/2005 4:00 AM

[Video Codecs]

CODEC Manufacturer Description Status
File Version Size
Creation Date
c:\windows\system32\msvidc32.dll
Microsoft Corporation
msvidc32.dll OK
C:\windows\system32\MSVIDC32.DLL 5.2.3790.0 (srv03_rtm.030324-2048) 67.00 KB (68,608 bytes)
3/25/2005 4:00 AM
c:\windows\system32\msrle32.dll
Microsoft Corporation
msrle32.dll OK
C:\windows\system32\MSRLE32.DLL 5.2.3790.0 (srv03_rtm.030324-2048) 24.50 KB (25,088 bytes)
3/25/2005 4:00 AM

[CD-ROM]

Item Value

[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 (oem1.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 0x00001000 - 0x000010FF
Memory Address 0x84020000 - 0x8402FFFF
IRQ Channel IRQ 20
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), 6/20/2003 8:18 AM)

[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 Not Available
Product Type Intel(R) PRO/1000 MT Dual Port Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 6/8/2007 11:44 AM
Index 1
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 [00000002] 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 6/8/2007 11:44 AM
Index 2
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 [00000003] RAS Async Adapter

Adapter Type Not Available
Product Type RAS Async Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 6/8/2007 11:44 AM
Index 3
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Lease Expires Not Available
DHCP Server Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000004] WAN Miniport (L2TP)

Adapter Type Not Available
Product Type WAN Miniport (L2TP)
Installed Yes
PNP Device ID
ROOT\MS_L2TPMINIPORT\0000

Last Reset 6/8/2007 11:44 AM
Index 4
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), 3/25/2005 4:00 AM)

Name [00000005] 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 6/8/2007 11:44 AM
Index 5
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), 3/25/2005 4:00 AM)

Name [00000006] 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 6/8/2007 11:44 AM
Index 6
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), 3/25/2005 4:00 AM)

Name [00000007] Direct Parallel
Adapter Type Not Available
Product Type Direct Parallel
Installed Yes
PNP Device ID
ROOT\MS_PTIMINIPORT\0000

Last Reset 6/8/2007 11:44 AM
Index 7
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), 3/25/2005 4:00 AM)

Name [00000008] WAN Miniport (IP)

Adapter Type Not Available
Product Type WAN Miniport (IP)
Installed Yes
PNP Device ID
ROOT\MS_NDISWANIP\0000

Last Reset 6/8/2007 11:44 AM
Index 8
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), 3/25/2005 4:00 AM)

Name [00000009] 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_12CF103C&REV_03\4&2C178B65&0&10

Last Reset 6/8/2007 11:44 AM
Index 9
Service Name E1000
IP Address 192.168.1.2
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:8A:3E
Memory Address 0x901A0000-0x901BFFFF
Memory Address 0x900C0000-0x900FFFFF
I/O Port 0x00002140-0x0000217F
IRQ Channel IRQ 31
Driver
c:\windows\system32\drivers\e1000645.sys (8.7.1.0 built by: WinDDK, 475.50 KB (486,912 bytes), 4/27/2006 1:27 AM)

Name [00000010] 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_12CF103C&REV_03\4&2C178B65&0&11

Last Reset 6/8/2007 11:44 AM
Index 10
Service Name E1000
IP Address 192.168.1.1
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:8A:3F
Memory Address 0x90180000-0x9019FFFF
Memory Address 0x90040000-0x9007FFFF
I/O Port 0x00002100-0x0000213F
IRQ Channel IRQ 32
Driver
c:\windows\system32\drivers\e1000645.sys (8.7.1.0 built by: WinDDK, 475.50 KB (486,912 bytes), 4/27/2006 1:27 AM)

Name [00000011] 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 6/8/2007 11:44 AM
Index 11
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 [00000012] 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 6/8/2007 11:44 AM
Index 12
Service Name E1000
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled Yes
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
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

[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 Communications Port (COM2)

Status OK
PNP Device ID ACPI\PNP0501\0

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
IRQ Channel IRQ 24
Memory Address 0xFF5E2000-0xFF5E2007

Driver
c:\windows\system32\drivers\serial.sys (5.2.3790.1830 (srv03_sp1_rtm.050324-1447), 191.00 KB (195,584 bytes), 3/25/2005 4:00 AM)
[Parallel]

Item Value

[Storage]

[Drives]

Item Value
Drive C:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 33.27 GB (35,726,962,688 bytes)

Free Space 19.44 GB (20,877,824,000 bytes)

Volume Name
Volume Serial Number 46ED6484

Drive G:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 49.98 GB (53,666,054,144 bytes)

Free Space 38.98 GB (41,856,598,016 bytes)

Volume Name G Drive
Volume Serial Number ACB4154D

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

[Disks]

Item Value
Description \\.\PHYSICALDRIVE24
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #24, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #24, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)
Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE25
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #25, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #25, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE26
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #26, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #26, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE27
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116

Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #27, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #27, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE28
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #28, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #28, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE29
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #29, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #29, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE30
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #30, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #30, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE31
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #31, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #31, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE0
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #0, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #0, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE1
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #1, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #1, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE2
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #2, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #2, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE3
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580

Tracks/Cylinder 255
Partition Disk #3, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #3, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE4
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #4, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #4, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE5
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #5, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #5, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE6
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #6, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #6, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE7
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #7, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #7, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE8
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #8, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #8, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE9
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #9, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #9, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE10
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #10, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #10, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE11
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #11, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)

Partition Starting Offset 17,408 bytes
Partition Disk #11, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE12
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #12, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #12, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE13
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #13, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #13, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE14
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)
Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #14, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #14, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE15
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #15, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #15, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE16
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #16, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #16, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE17
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #17, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #17, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE18
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #18, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #18, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE19
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #19, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #19, Partition #1

Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE20
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #20, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #20, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE21
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #21, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #21, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE22
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #22, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #22, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE23
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #23, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #23, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE40
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #40, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #40, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE41
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #41, Partition #0
Partition Size 345.49 GB (370,962,202,112 bytes)

Partition Starting Offset 136,314,880 bytes

Description \\.\PHYSICALDRIVE42
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #42, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #42, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE43
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #43, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #43, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE44

Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #44, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #44, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE45
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #45, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #45, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE46
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #46, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)
Partition Starting Offset 136,314,880 bytes

Partition Disk #46, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE47
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #47, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #47, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE32
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #32, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #32, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE33
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
Sectors/Track 63
SCSI Target ID Not Available
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #33, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #33, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE34
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #34, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #34, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE35
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #35, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #35, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE36
Manufacturer Not Available
Model Not Available

Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #36, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes

Partition Disk #36, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE37
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #37, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #37, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 bytes

Description \\.\PHYSICALDRIVE38
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 122.07 GB (131,069,836,800 bytes)

Total Cylinders 15,935
Total Sectors 255,995,775
Total Tracks 4,063,425
Tracks/Cylinder 255
Partition Disk #38, Partition #0
Partition Size 78.54 GB (84,330,676,224 bytes)

Partition Starting Offset 136,314,880 bytes
Partition Disk #38, Partition #1
Partition Size 43.41 GB (46,606,057,472 bytes)

Partition Starting Offset 84,466,991,104 bytes

Description \\.\PHYSICALDRIVE39
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus Not Available
SCSI Logical Unit Not Available
SCSI Port Not Available
SCSI Target ID Not Available
Sectors/Track 63
Size 345.61 GB (371,091,732,480 bytes)

Total Cylinders 45,116
Total Sectors 724,788,540
Total Tracks 11,504,580
Tracks/Cylinder 255
Partition Disk #39, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #39, Partition #1
Partition Size 345.49 GB (370,964,281,856 bytes)

Partition Starting Offset 134,235,136 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 0
Sectors/Track 63
Size 838.18 GB (899,993,687,040 bytes)

Total Cylinders 109,418
Total Sectors 1,757,800,170
Total Tracks 27,901,590
Tracks/Cylinder 255
Partition Disk #49, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #49, Partition #1
Partition Size 838.06 GB (899,864,048,128 bytes)

Partition Starting Offset 134,235,136 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 2
SCSI Port 1
SCSI Target ID 0
Sectors/Track 63
Size 838.18 GB (899,993,687,040 bytes)
Total Cylinders 109,418
Total Sectors 1,757,800,170
Total Tracks 27,901,590
Tracks/Cylinder 255
Partition Disk #50, Partition #0
Partition Size 1.00 MB (1,048,576 bytes)
Partition Starting Offset 17,408 bytes
Partition Disk #50, Partition #1
Partition Size 838.06 GB (899,864,048,128 bytes)

Partition Starting Offset 134,235,136 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model HP LOGICAL VOLUME 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 0
SCSI Target ID 4
Sectors/Track 63
Size 33.88 GB (36,380,413,440 bytes)

Total Cylinders 4,423
Total Sectors 71,055,495
Total Tracks 1,127,865
Tracks/Cylinder 255
Partition Disk #48, Partition #0
Partition Size 100.00 MB (104,857,600 bytes)

Partition Starting Offset 17,408 bytes
Partition Disk #48, Partition #1
Partition Size 400.00 MB (419,430,400 bytes)

Partition Starting Offset 104,875,008 bytes

Partition Disk #48, Partition #2
Partition Size 33.27 GB (35,726,964,736 bytes)

Partition Starting Offset 658,523,648 bytes

[SCSI]

Item Value
Name Smart Array P600 Controller (Non-Miniport)
Manufacturer Hewlett-Packard
Status OK
PNP Device ID PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&2C178B65&0&08

Memory Address 0x901C0000-0x901C1FFF
I/O Port 0x00002000-0x00003FFF
Memory Address 0x90140000-0x9017FFFF
IRQ Channel IRQ 27
Driver c:\windows\system32\drivers\hpqcissb.sys (5.15.64.64 Build 1 (IA64) built by: WinDDK, 127.50 KB (130,560 bytes), 2/28/2007 6:05 PM)

Name Smart Array P600 Controller (Non-Miniport)
Manufacturer Hewlett-Packard
Status OK

PNP Device ID
PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&915E908&0&08
Memory Address 0xA0080000-0xA0081FFF
I/O Port 0x00004000-0x00005FFF
Memory Address 0xA0040000-0xA007FFFF
IRQ Channel IRQ 38
Driver
c:\windows\system32\drivers\hpqcissb.sys (5.15.64.64 Build 1 (IA64) built by: WinDDK, 127.50 KB (130,560 bytes), 2/28/2007 6:05 PM)

Name Smart Array P600 Controller (Non-Miniport)
Manufacturer Hewlett-Packard
Status OK
PNP Device ID
PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&19EBB955&0&08

Memory Address 0xB0080000-0xB0081FFF
I/O Port 0x00006000-0x00007FFF
Memory Address 0xB0040000-0xB007FFFF
IRQ Channel IRQ 49
Driver
c:\windows\system32\drivers\hpqcissb.sys (5.15.64.64 Build 1 (IA64) built by: WinDDK, 127.50 KB (130,560 bytes), 2/28/2007 6:05 PM)

Name Smart Array P600 Controller

Manufacturer Hewlett-Packard Company
Status OK
PNP Device ID
PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&15291AB&0&08
Memory Address 0xC0080000-0xC0081FFF
I/O Port 0x00008000-0x00009FFF
Memory Address 0xC0040000-0xC007FFFF
IRQ Channel IRQ 60
Driver
c:\windows\system32\drivers\hpcissss2.sys (5.12.0.64 Build 3 (ia64) built by: buildsrv, 137.50 KB (140,800 bytes), 11/27/2006 6:55 AM)

Name Smart Array P600 Controller (Non-Miniport)
Manufacturer Hewlett-Packard
Status OK
PNP Device ID
PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&24543408&0&08

Memory Address 0xD00C0000-0xD00C1FFF
I/O Port 0x0000A100-0x0000A1FF
Memory Address 0xD0080000-0xD00BFFFF
IRQ Channel IRQ 71
Driver
c:\windows\system32\drivers\hpqcissb.sys (5.15.64.64 Build 1 (IA64) built by: WinDDK, 127.50 KB (130,560 bytes), 2/28/2007 6:05 PM)

Name Emulex LightPulse FC2143, PCI Slot 8) StorPort Miniport Driver
Manufacturer Emulex
Status OK
PNP Device ID
PCI\VEN_10DF&DEV_F0D5&SUBSYS_F0D510DF&REV_01\4&24543408&0&10

Memory Address 0xD00C3000-0xD00C3FFF
Memory Address 0xD00C2000-0xD00C20FF
IRQ Channel IRQ 75
Driver
c:\windows\system32\drivers\elxstor.sys (6-1.30A9 03/18/2007 WS2K3 64 bit IA64 built by: WinDDK, 901.00 KB (922,624 bytes), 8/4/2006 5:40 AM)

Name Smart Array P600 Controller (Non-Miniport)
Manufacturer Hewlett-Packard
Status OK
PNP Device ID
PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&5D9CB86&0&08
Memory Address 0xE0080000-0xE0081FFF
I/O Port 0x0000C000-0x0000DFFF
Memory Address 0xE0040000-0xE007FFFF
IRQ Channel IRQ 82
Driver
c:\windows\system32\drivers\hpqcissb.sys (5.15.64.64 Build 1 (IA64) built by: WinDDK, 127.50 KB (130,560 bytes), 2/28/2007 6:05 PM)

Name Smart Array P600 Controller (Non-Miniport)
Manufacturer Hewlett-Packard
Status OK
PNP Device ID
PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&1E72F330&0&08

Memory Address 0xF0080000-0xF0081FFF
I/O Port 0x0000E000-0x0000FFFF
Memory Address 0xF0040000-0xF007FFFF
IRQ Channel IRQ 93
Driver
c:\windows\system32\drivers\hpqcissb.sys (5.15.64.64 Build 1 (IA64) built by: WinDDK, 127.50 KB (130,560 bytes), 2/28/2007 6:05 PM)

[IDE]

Item Value

[Printing]

Name Driver Port Name Server Name

[Problem Devices]

Device PNP Device ID Error Code
NEC PCI to USB Open Host Controller
PCI\VEN_1033&DEV_0035&SUBSYS_022603F0&REV_43\4&4F5EBC7&0&10 39
NEC PCI to USB Open Host Controller
PCI\VEN_1033&DEV_0035&SUBSYS_022603F0&REV_43\4&4F5EBC7&0&11 39
Standard Enhanced PCI to USB Host Controller
PCI\VEN_1033&DEV_00E0&SUBSYS_032603F0&REV_04\4&4F5EBC7&0&12 39

[USB]

Device PNP Device ID
NEC PCI to USB Open Host Controller
PCI\VEN_1033&DEV_0035&SUBSYS_022603F0&REV_43\4&4F5EBC7&0&10
NEC PCI to USB Open Host Controller
PCI\VEN_1033&DEV_0035&SUBSYS_022603F0&REV_43\4&4F5EBC7&0&11
Standard Enhanced PCI to USB Host Controller
PCI\VEN_1033&DEV_00E0&SUBSYS_032603F0&REV_04\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 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\aic78
xx.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
arc arc Not Available Kernel
Driver No Disabled Stopped
OK Normal No
No
asyncmac RAS Asynchronous Media Driver
c:\windows\system32\drivers\async
mac.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 No Disabled
Stopped OK Normal
No No
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
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 No
Disabled Stopped OK
Normal No No

cdrom CD-ROM Driver
c:\windows\system32\drivers\cdro
m.sys Kernel Driver No System
Stopped OK Normal
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
c:\windows\system32\drivers\cmdid
e.sys Kernel Driver No Disabled
Stopped OK Normal
No No
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
No No
cpqcissm cpqcissm
c:\windows\system32\drivers\cpqci
ssm.sys Kernel Driver No Disabled
Stopped OK Normal
No No
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
cpqteam HP Network Configuration Utility
c:\windows\system32\drivers\cpqte
am.sys Kernel Driver No Manual
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 Yes Disabled
Running OK Normal
No Yes
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 Network
Connection Driver
c:\windows\system32\drivers\e100
0645.sys Kernel Driver Yes Manual
Running OK Normal
No Yes

elxplus Emulex PLUS Service
c:\windows\system32\drivers\elxplu
s.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
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
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 Device
c:\windows\system32\drivers\hphlth.sys Kernel Driver Yes Manual Running OK Normal No Yes

hpmpser HP MP Driver
c:\windows\system32\drivers\hpmpser.sys Kernel Driver No Manual Stopped OK Normal No No

hpn hpn
c:\windows\system32\drivers\hpn.sys Kernel Driver No Disabled Stopped OK Normal No No

hpqcissb Smart Array Controllers Non-Miniport Bus Driver
c:\windows\system32\drivers\hpqcissb.sys Kernel Driver Yes Boot Running OK Normal No Yes

hpqcissd Smart Array Controllers Non-Miniport Disk Driver
c:\windows\system32\drivers\hpqcissd.sys Kernel Driver Yes Boot Running OK Normal No Yes

http HTTP
c:\windows\system32\drivers\http.sys Kernel Driver No Manual Stopped OK Normal No No

i2omgmt i2omgmt Not Available Kernel Driver No System Stopped OK Normal No No

iirsp iirsp Not Available Kernel Driver No Disabled 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\intelide.sys Kernel Driver No Disabled Stopped OK Normal No No

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\ipfltdrv.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

isapnp PnP ISA/EISA Bus Driver
c:\windows\system32\drivers\isapnp.sys Kernel Driver No Disabled Stopped OK Critical No No

kbdclass Keyboard Class Driver
c:\windows\system32\drivers\kbdclass.sys Kernel Driver Yes System Running OK Normal No Yes

kbdhid Keyboard HID Driver
c:\windows\system32\drivers\kbdhid.sys Kernel Driver No System Stopped OK Ignore No No

krdrv Kernel Driver
c:\windows\system32\drivers\krdrv.sys Kernel Driver No Manual Stopped OK Normal No No

ksecdd KSecDD
c:\windows\system32\drivers\ksecdd.sys Kernel Driver Yes Boot Running OK Normal No Yes

ksthunk Kernel Streaming WOW64 Thunk Service
c:\windows\system32\drivers\ksthunk.sys Kernel Driver Yes Manual Running OK Normal No Yes

lp6nds35 lp6nds35
c:\windows\system32\drivers\lp6nds35.sys Kernel Driver No Disabled Stopped OK Normal No No

mnmdd mnmdd Not Available Kernel Driver No System Stopped OK Ignore No No

modem Modem
c:\windows\system32\drivers\modem.sys Kernel Driver No Manual Stopped OK Ignore No No

mouclass Mouse Class Driver
c:\windows\system32\drivers\mouclass.sys Kernel Driver Yes System Running OK Normal No Yes

mouhid Mouse HID Driver
c:\windows\system32\drivers\mouhid.sys Kernel Driver No Manual Stopped OK Ignore No No

mountmgr Mount Point Manager
c:\windows\system32\drivers\mountmgr.sys Kernel Driver Yes Boot Running OK Normal No Yes

mraid35x mraid35x
c:\windows\system32\drivers\mraid35x.sys Kernel Driver No Disabled Stopped OK Normal No No

mrxdav WebDav Client Redirector
c:\windows\system32\drivers\mrxdav.sys File System Driver No Manual Stopped OK Normal No No

mrxsmb MRXSMB
c:\windows\system32\drivers\mrxsmb.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\mssmbios.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.sys Kernel Driver Yes Boot Running OK Normal No Yes

ndistapi Remote Access NDIS TAPI Driver
c:\windows\system32\drivers\ndistapi.sys Kernel Driver Yes Manual Running OK Normal No Yes

ndisuio NDIS Usermode I/O Protocol
c:\windows\system32\drivers\ndisuio.sys Kernel Driver No Manual Stopped OK Normal No No

ndiswan Remote Access NDIS WAN Driver
c:\windows\system32\drivers\ndiswan.sys Kernel Driver Yes Manual Running OK Normal No Yes

ndproxy NDIS Proxy
c:\windows\system32\drivers\ndproxy.sys Kernel Driver Yes Manual Running OK Normal No Yes

netbios NetBIOS Interface
c:\windows\system32\drivers\netbios.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\nfrd960.sys Kernel Driver No Disabled Stopped OK Normal No No

npfs Npfs
c:\windows\system32\drivers\npfs.sys 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

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

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 STOR
Miniport Driver (wia64 IP)
c:\windows\system32\drivers\ql230
0.sys Kernel Driver Yes Boot
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
No Yes

rdpdr Terminal Server Device Redirector
Driver
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

serenum Serenum Filter Driver
c:\windows\system32\drivers\seren
um.sys Kernel Driver Yes Manual
Running OK Normal

serial Serial port driver
No Yes
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

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 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 No Manual
Stopped OK Normal
No No
usbhub USB2 Enabled Hub
c:\windows\system32\drivers\usbhu
b.sys Kernel Driver No Manual
Stopped OK Normal
No No
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
vgasave VGA Display Controller.
c:\windows\system32\drivers\vga.s
ys Kernel Driver Yes System
Running OK Ignore
No Yes
viaide ViaIde
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
No SYSTEM
5.2.3790.1830
10/1/2002 (Standard system
devices) machine.inf Not Available
ROOT\SYSTEM\0001

Plug and Play Software Device Enumerator
No SYSTEM
5.2.3790.1830
10/1/2002 (Standard system
devices) machine.inf Not Available
ROOT\SYSTEM\0000
Terminal Server Mouse Driver No
SYSTEM 5.2.3790.1830
10/1/2002 (Standard system
devices) machine.inf Not Available
ROOT\RDP_MOU\0000
Terminal Server Keyboard Driver No
SYSTEM 5.2.3790.1830
10/1/2002 (Standard system
devices) machine.inf Not Available
ROOT\RDP_KBD\0000
Terminal Server Device Redirector No
SYSTEM 5.2.3790.1830
10/1/2002 (Standard system
devices) machine.inf Not Available
ROOT\RDPDR\0000
Direct Parallel No NET
5.2.3790.1830
10/1/2002 Microsoft
netrasa.inf Not Available
ROOT\MS_PTIMINIPORT\0000

WAN Miniport (PPTP) No NET
5.2.3790.1830
10/1/2002 Microsoft
netrasa.inf Not Available
ROOT\MS_PPTPMINIPORT\0000

WAN Miniport (PPPOE) No NET
5.2.3790.1830
10/1/2002 Microsoft
netrasa.inf Not Available
ROOT\MS_PPPOEMINIPORT\0000

WAN Miniport (IP) No NET
5.2.3790.1830
10/1/2002 Microsoft
netrasa.inf Not Available
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WAN Miniport (L2TP) No NET
5.2.3790.1830
10/1/2002 Microsoft
netrasa.inf Not Available
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Video Codecs No MEDIA
5.2.3790.0 10/1/2002
(Standard system devices) wave.inf
Not Available
ROOT\MEDIA\MS_MMVID
Legacy Video Capture Devices No
MEDIA 5.2.3790.0
10/1/2002 (Standard system
devices) wave.inf Not Available
ROOT\MEDIA\MS_MMVCD
Media Control Devices No MEDIA
5.2.3790.0 10/1/2002
(Standard system devices) wave.inf
Not Available
ROOT\MEDIA\MS_MMMCI
Legacy Audio Drivers No MEDIA
5.2.3790.0 10/1/2002
(Standard system devices) wave.inf
Not Available
ROOT\MEDIA\MS_MMDRV
Audio Codecs No 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

sacdrv Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_SACDRV\0000

RDPWD Not Available LEGACYDRIVER
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ROOT\LEGACY_RDPWD\0000

RDPCDD Not Available LEGACYDRIVER
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ROOT\LEGACY_RDPCDD\0000

Remote Access Auto Connection Driver Not
Available LEGACYDRIVER Not
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ROOT\LEGACY_RASACD\0000

QLogic Fibre Channel STOR Miniport Driver
(wia64 IP) Not Available LEGACYDRIVER
Not Available Not Available Not
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Partition Manager Not Available
LEGACYDRIVER Not
Available Not Available Not Available Not
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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 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

ksecdd Not Available LEGACYDRIVER 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 ROOT\LEGACY_KRDRV\0000

IPSEC driver Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available ROOT\LEGACY_IPSEC\0000

IP Network Address Translator Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available ROOT\LEGACY_IPNAT\0000

HTTP Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available ROOT\LEGACY_HTTP\0000

hpcisss Not Available LEGACYDRIVER 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 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

AFD Not Available LEGACYDRIVER Not Available Not Available Not Available Not Available ROOT\LEGACY_AFD\0000

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10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\HWP0002\500

Disk drive No DISKDRIVE
5.2.3790.0 10/1/2002
(Standard disk drives) disk.inf
Not Available
SCSI\DISK&VEN_HP&PROD_LOGICAL_VOLUME&REV_1.76\5&2D46D291&0&000400
HP Virtual LUN No SYSTEM
5.2.3790.1830
10/1/2002 Compaq
scsidev.inf Not Available
SCSI\OTHER&VEN_COMPAQ&PROD_SCSI_COMMUNICATE&REV_CIS2\5&2D46D2918&0&000000
Smart Array P600 Controller No
SCSIADAPTER
5.12.0.64 9/14/2006 Hewlett-Packard Company oem9.inf Not Available
PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&15291AB&0&08
PCI bus No SYSTEM
5.2.3790.1830
10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\HWP0002\400
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&34D06FEE&0&0700004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&34D06FEE&0&0600004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&34D06FEE&0&0500004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&34D06FEE&0&0400004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&34D06FEE&0&0300004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&34D06FEE&0&0200004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&34D06FEE&0&0100004000000000

Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&34D06FEE&0&0000004000000000
Smart Array P600 Controller (Non-Miniport)
No SCSIADAPTER
5.12.2.64 8/11/2004 Hewlett-Packard oem16.inf Not Available
PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&19EBB955&0&08

PCI bus No SYSTEM
5.2.3790.1830
10/1/2002 (Standard system devices) machine.inf Not Available
ACPI\HWP0002\300
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2C11EC9C&0&0700004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2C11EC9C&0&0600004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2C11EC9C&0&0500004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2C11EC9C&0&0400004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2C11EC9C&0&0300004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2C11EC9C&0&0200004000000000
Smart Array Logical Volume No
DISKDRIVE 5.6.2.32
7/14/2004 Hewlett-Packard
oem18.inf Not Available
HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2C11EC9C&0&0100004000000000

Smart Array Logical Volume No DISKDRIVE 5.6.2.32 7/14/2004 Hewlett-Packard oem18.inf Not Available HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2C11EC9C&0&0000004000000000
Smart Array P600 Controller (Non-Miniport) No SCSIADAPTER 5.12.2.64 8/11/2004 Hewlett-Packard oem16.inf Not Available PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&915E908&0&08
PCI bus No SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\HWP0002\200
Intel(R) PRO/1000 MT Dual Port Server Adapter No NET 8.7.1.0 4/27/2006 Intel oem3.inf Not Available PCI\VEN_8086&DEV_1079&SUBSYS_12CF103C&REV_03\4&2C178B65&0&11

Intel(R) PRO/1000 MT Dual Port Server Adapter No NET 8.7.1.0 4/27/2006 Intel oem3.inf Not Available PCI\VEN_8086&DEV_1079&SUBSYS_12CF103C&REV_03\4&2C178B65&0&10

Smart Array Logical Volume No DISKDRIVE 5.6.2.32 7/14/2004 Hewlett-Packard oem18.inf Not Available HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2BA24918&0&0700004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.2.32 7/14/2004 Hewlett-Packard oem18.inf Not Available HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2BA24918&0&0600004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.2.32 7/14/2004 Hewlett-Packard oem18.inf Not Available HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2BA24918&0&0500004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.2.32 7/14/2004 Hewlett-Packard oem18.inf Not Available HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2BA24918&0&0400004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.2.32 7/14/2004 Hewlett-Packard oem18.inf Not Available HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2BA24918&0&0300004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.2.32 7/14/2004 Hewlett-Packard oem18.inf Not Available HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2BA24918&0&0200004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.2.32 7/14/2004 Hewlett-Packard oem18.inf Not Available HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2BA24918&0&0100004000000000
Smart Array Logical Volume No DISKDRIVE 5.6.2.32 7/14/2004 Hewlett-Packard oem18.inf Not Available HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\5&2BA24918&0&0000004000000000
Smart Array P600 Controller (Non-Miniport) No SCSIADAPTER 5.12.2.64 8/11/2004 Hewlett-Packard oem16.inf Not Available PCI\VEN_103C&DEV_3220&SUBSYS_3225103C&REV_00\4&2C178B65&0&08

PCI bus No SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\HWP0002\100
Communications Port No PORTS 5.2.3790.0 10/1/2002 (Standard port types) msports.inf Not Available ACPI\PNP0501\0
Default Monitor No MONITOR 5.1.2001.0 6/6/2001 (Standard monitor types) monitor.inf Not Available DISPLAY\DEFAULT_MONITOR\5&CAFE5DC&0&10000000&00&04
RADEON 7000 SERIES No DISPLAY 6.14.10.6368 6/20/2003 ATI Technologies Inc. oem1.inf Not Available PCI\VEN_1002&DEV_5159&SUBSYS_1292103C&REV_00\4&4F5EBC7&0&20
Standard Enhanced PCI to USB Host Controller No USB 5.2.3790.1830 10/1/2002 (Standard USB Host Controller) usbport.inf Not Available PCI\VEN_1033&DEV_00E0&SUBSYS_032603F0&REV_04\4&4F5EBC7&0&12
NEC PCI to USB Open Host Controller No USB 5.2.3790.1830 10/1/2002 NEC usbport.inf Not Available PCI\VEN_1033&DEV_0035&SUBSYS_022603F0&REV_43\4&4F5EBC7&0&11
NEC PCI to USB Open Host Controller No USB 5.2.3790.1830 10/1/2002 NEC usbport.inf Not Available PCI\VEN_1033&DEV_0035&SUBSYS_022603F0&REV_43\4&4F5EBC7&0&10
HP Management Processor No SYSTEM 5.0.3790.1 7/28/2005 Hewlett-Packard oem4.inf Not Available PCI\VEN_103C&DEV_1048&SUBSYS_1301103C&REV_00\4&4F5EBC7&0&0A
HP Management Shared Memory Device No SYSTEM 5.0.3790.1 7/27/2005 Hewlett-Packard oem8.inf Not Available PCI\VEN_103C&DEV_1302&SUBSYS_1302103C&REV_00\4&4F5EBC7&0&09
HP Management Processor No SYSTEM 5.0.3790.1 7/28/2005 Hewlett-Packard oem4.inf Not Available PCI\VEN_103C&DEV_1303&SUBSYS_1303103C&REV_00\4&4F5EBC7&0&08
PCI bus No SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\HWP0002\0
HP Baseboard Management Controller Interface Device No SYSTEM 7.2.3790.6 8/12/2005 Hewlett Packard Co. oem0.inf Not Available ACPI\IPI0001\0
Generic Bus No SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\HWP0001\0
ACPI Thermal Zone No SYSTEM 5.2.3790.1830 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\THERMALZONE\THM0

Microsoft ACPI-Compliant System No SYSTEM 5.2.3790.0 10/1/2002 Microsoft acpi.inf Not Available ACPI_HAL\PNP0C08\0

ACPI IA64-based PC No COMPUTER 5.2.3790.1830 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 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>
HP_SSL_SHARE	C:\hp\sslshare\	<SYSTEM>
NUMBER_OF_PROCESSORS	16	<SYSTEM>
OS	Windows_NT	<SYSTEM>
Path	%SystemRoot%\system32;%SystemRoot%;%SystemRoot%\System32\Wbem;%SystemRoot%\syswow64;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\Microsoft SQL Server\MSSQL.1\MSSQL\Binn;C:\Program Files\Microsoft SQL Server\90\DTS\Binn\	<SYSTEM>
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH	<SYSTEM>
PROCESSOR_ARCHITECTURE	IA64	<SYSTEM>
PROCESSOR_IDENTIFIER	ia64 Family 32 Model 0 Stepping 5, GenuineIntel	<SYSTEM>

PROCESSOR_LEVEL 32
<SYSTEM>
PROCESSOR_REVISION 0005
<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
TEMP %USERPROFILE%\Local
Settings\Temp
SQLSAPPHIRE\Administrator

TMP %USERPROFILE%\Local
Settings\Temp
SQLSAPPHIRE\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
S: \\hpwieshare\d$ Disk
Persistent Connection

[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 316 11
409600 2826240
6/8/2007 11:45 AM Not
Available Not Available Not Available
csrss.exe Not Available 364 13
Not Available Not Available
6/8/2007 11:45 AM Not
Available Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe
388 13 409600
2826240 6/8/2007 11:46 AM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 664.50
KB (680,448 bytes) 3/25/2005 4:00 AM

services.exe c:\windows\system32\services.exe
432 9 409600
2826240 6/8/2007 11:46 AM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 300.00
KB (307,200 bytes) 3/25/2005 4:00 AM

lsass.exe c:\windows\system32\lsass.exe
444 9 409600
2826240 6/8/2007 11:46 AM
5.2.3790.0 (srv03_rtm.030324-
2048) 15.00 KB (15,360 bytes)
3/25/2005 4:00 AM
svchost.exe c:\windows\system32\svchost.exe
600 8 409600
2826240 6/8/2007 11:46 AM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 36.00 KB
(36,864 bytes) 3/25/2005 4:00 AM

svchost.exe Not Available 664 8
Not Available Not Available
6/8/2007 11:46 AM Not
Available Not Available Not Available
svchost.exe Not Available 728 8
Not Available Not Available
6/8/2007 11:46 AM Not
Available Not Available Not Available
svchost.exe Not Available 764 8
Not Available Not Available
6/8/2007 11:46 AM Not
Available Not Available Not Available
svchost.exe c:\windows\system32\svchost.exe
812 8 409600
2826240 6/8/2007 11:46 AM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 36.00 KB
(36,864 bytes) 3/25/2005 4:00 AM

msdtc.exe Not Available 880 8
Not Available Not Available
6/8/2007 11:46 AM Not
Available Not Available Not Available
svchost.exe c:\windows\system32\svchost.exe
1264 8 409600
2826240 6/8/2007 11:46 AM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 36.00 KB
(36,864 bytes) 3/25/2005 4:00 AM

wmiprvse.exe Not Available 1408
8 Not Available Not
Available 6/8/2007 11:47 AM Not
Available Not Available Not Available
csrss.exe Not Available 1664 13
Not Available Not Available
6/8/2007 11:48 AM Not
Available Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe
1688 13 409600
2826240 6/8/2007 11:48 AM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 664.50
KB (680,448 bytes) 3/25/2005 4:00 AM

rdpclip.exe c:\windows\system32\rdpclip.exe
1860 8 409600
2826240 6/8/2007 11:48 AM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 211.00
KB (216,064 bytes) 3/25/2005 4:00 AM
explorer.exe c:\windows\explorer.exe 1976
8 409600 2826240
6/8/2007 11:48 AM
6.00.3790.2781
(srv03_sp1_qfe.060830-0223) 1.64 MB
(1,716,224 bytes) 10/3/2006 7:01 AM

logon.scr Not Available 904 4
Not Available Not Available
6/8/2007 11:58 AM Not
Available Not Available Not Available
cmd.exe c:\windows\system32\cmd.exe
476 8 409600
2826240 6/8/2007 12:25 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 507.50
KB (519,680 bytes) 3/25/2005 4:00 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
656 8 409600
2826240 6/8/2007 12:26 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 72.00 KB
(73,728 bytes) 3/25/2005 4:00 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
1376 8 409600
2826240 6/8/2007 12:27 PM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 72.00 KB
(73,728 bytes) 3/25/2005 4:00 AM

wmiprvse.exe Not Available 1528
8 Not Available Not
Available 6/8/2007 12:27 PM Not
Available Not Available Not Available

[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) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\winlogon.exe

ntdll 5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 1.56 MB
(1,638,400 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\ntdll.dll

kernel32 5.2.3790.2756
(srv03_sp1_gdr.060725-0040) 1.88 MB
(1,967,104 bytes) 7/24/2006 10:14 PM
Microsoft Corporation
c:\windows\system32\kernel32.dll

msvcrt 7.0.3790.1830
(srv03_sp1_rtm.050324-1447) 932.00
KB (954,368 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\msvcrt.dll

advapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.41 MB (1,482,752 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\advapi32.dll

rpcrt4 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 2.35 MB (2,463,232 bytes) 10/3/2006 7:02 AM
Microsoft Corporation
c:\windows\system32\rpcrt4.dll

user32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.41 MB (1,476,096 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\user32.dll

gdi32 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 885.00 KB (906,240 bytes) 10/3/2006 7:01 AM
Microsoft Corporation
c:\windows\system32\gdi32.dll

userenv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.49 MB (1,563,648 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\userenv.dll

nddeapi 5.2.3790.0 (srv03_rtm.030324-2048) 39.50 KB (40,448 bytes)
3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\nddeapi.dll

crypt32 5.131.3790.1830 (srv03_sp1_rtm.050324-1447) 1.68 MB (1,759,232 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\crypt32.dll

msasn1 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 179.50 KB (183,808 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\msasn1.dll

secur32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 186.00 KB (190,464 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\secur32.dll

winsta 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 143.50 KB (146,944 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\winsta.dll

netapi32 5.2.3790.2769 (srv03_sp1_gdr.060810-0002) 883.50 KB (904,704 bytes) 8/30/2006 11:14 AM
Microsoft Corporation
c:\windows\system32\netapi32.dll

profmap 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 59.50 KB (60,928 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\profmap.dll

regapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 141.50 KB (144,896 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\regapi.dll

ws2_32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 248.00 KB (253,952 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\ws2_32.dll

ws2help 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 51.00 KB (52,224 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\ws2help.dll

msgina 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.40 MB (1,465,344 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\msgina.dll

shsvcs 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 354.50 KB (363,008 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\shsvcs.dll

shlwapi 6.00.3790.2732 (srv03_sp1_gdr.060623-0310) 805.00 KB (824,320 bytes) 7/28/2006 4:25 AM
Microsoft Corporation
c:\windows\system32\shlwapi.dll

sfc 5.2.3790.0 (srv03_rtm.030324-2048) 7.50 KB (7,680 bytes)
3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\sfc.dll

sfc_os 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 273.00 KB (279,552 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\sfc_os.dll

wintrust 5.131.3790.1830 (srv03_sp1_rtm.050324-1447) 459.50 KB (470,528 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\wintrust.dll

imagehlp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 140.50 KB (143,872 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\imagehlp.dll

ole32 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 3.81 MB (3,995,648 bytes) 10/3/2006 7:02 AM
Microsoft Corporation
c:\windows\system32\ole32.dll

comctl32 6.0 (srv03_sp1_qfe.060825-0235) 2.50 MB (2,617,856 bytes)
8/27/2006 6:32 PM
Microsoft Corporation
c:\windows\winsxs\ia64_microsoft.windows.common-controls_6595b64144ccf1df_6.0.3790.2778_x-ww_d84b35b1\comctl32.dll

version 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 51.00 KB (52,224 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\version.dll

winscard 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 302.00 KB (309,248 bytes) 8/30/2006 4:45 AM
Microsoft Corporation
c:\windows\system32\winscard.dll

wtsapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 54.00 KB (55,296 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\wtsapi32.dll

winmm 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 428.00 KB (438,272 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\winmm.dll

shell32 6.00.3790.2781 (srv03_sp1_qfe.060830-0223) 12.63 MB (13,240,320 bytes) 10/3/2006 7:02 AM
Microsoft Corporation
c:\windows\system32\shell32.dll

setupapi 5.2.3790.2743 (srv03_sp1_qfe.060710-0322) 1.99 MB (2,086,912 bytes) 7/10/2006 9:28 AM
Microsoft Corporation
c:\windows\system32\setupapi.dll

sxs 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.82 MB (1,904,640 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\sxs.dll

wldap32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 441.50 KB (452,096 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\wldap32.dll

cscdll 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 207.00 KB (211,968 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\cscdll.dll

dimsntfy 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 51.50 KB (52,736 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\dimsntfy.dll

wlnotify 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 239.50 KB (245,248 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\wlnotify.dll

winspool 5.2.3790.2571 (srv03_sp1_qfe.051115-1731) 400.50 KB (410,112 bytes) 11/16/2005 4:06 AM
Microsoft Corporation
c:\windows\system32\winspool.drv

mpr 5.2.3790.0 (srv03_rtm.030324-2048) 163.00 KB (166,912 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\mpr.dll

oleaut32 5.2.3790.1830 3.75 MB (3,930,624 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\oleaut32.dll

comctl32 5.82 (srv03_sp1_qfe.060825-0235) 1.72 MB (1,803,264 bytes) 8/27/2006 6:32 PM Microsoft Corporation c:\windows\winsxs\ia64_microsoft.windows.common-controls_6595b64144ccf1df_5.82.3790.2778_x-ww_78d6f02c\comctl32.dll

uxtheme 6.00.3790.2781 (srv03_sp1_qfe.060830-0223) 542.50 KB (555,520 bytes) 10/3/2006 7:02 AM Microsoft Corporation c:\windows\system32\uxtheme.dll

scredir 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 69.00 KB (70,656 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\scredir.dll

samlib 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 106.50 KB (109,056 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\samlib.dll

clbcatq 2001.12.4720.2736 (srv03_sp1_qfe.060629-0146) 1.29 MB (1,351,680 bytes) 6/28/2006 11:50 PM Microsoft Corporation c:\windows\system32\clbcatq.dll

comres 2001.12.4720.0 (srv03_rtm.030324-2048) 779.50 KB (798,208 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\comres.dll

cscui 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 627.00 KB (642,048 bytes) 10/3/2006 7:01 AM Microsoft Corporation c:\windows\system32\cscui.dll

drprov 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 32.50 KB (33,280 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\drprov.dll

rdpsnd 5.2.3790.0 (srv03_rtm.030324-2048) 63.00 KB (64,512 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\rdpsnd.dll

psapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 53.00 KB (54,272 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\psapi.dll

ntlanman 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 117.00 KB (119,808 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\ntlanman.dll

netui0 5.2.3790.0 (srv03_rtm.030324-2048) 181.50 KB (185,856 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\netui0.dll

netui1 5.2.3790.0 (srv03_rtm.030324-2048) 482.00 KB (493,568 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\netui1.dll

davclnt 5.2.3790.0 (srv03_rtm.030324-2048) 59.00 KB (60,416 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\davclnt.dll

mprui 5.2.3790.0 (srv03_rtm.030324-2048) 97.00 KB (99,328 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\mprui.dll

netui2 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 803.50 KB (822,784 bytes) 8/30/2006 4:45 AM Microsoft Corporation c:\windows\system32\netui2.dll

comdlg32 6.00.3790.2781 (srv03_sp1_qfe.060830-0223) 743.50 KB (761,344 bytes) 10/3/2006 7:01 AM Microsoft Corporation c:\windows\system32\comdlg32.dll

netmsg 5.2.3790.0 (srv03_rtm.030324-2048) 177.50 KB (181,760 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\netmsg.dll

msacm32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 87.00 KB (89,088 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\msacm32.drv

msacm32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 276.50 KB (283,136 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\msacm32.dll

imaadp32 5.2.3790.0 (srv03_rtm.030324-2048) 55.00 KB (56,320 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\imaadp32.acm

msadp32 5.2.3790.0 (srv03_rtm.030324-2048) 49.00 KB (50,176 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\msadp32.acm

msg711 5.2.3790.0 (srv03_rtm.030324-2048) 33.00 KB (33,792 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\msg711.acm

msgsm32 5.2.3790.0 (srv03_rtm.030324-2048) 66.50 KB (68,096 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\msgsm32.acm

tssoft32 1.01 29.00 KB (29,696 bytes) 3/25/2005 4:00 AM DSP GROUP, INC. c:\windows\system32\tssoft32.acm

tsd32 1.03 38.00 KB (38,912 bytes) 3/25/2005 4:00 AM DSP GROUP, INC. c:\windows\system32\tsd32.dll

ntmarta 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 366.00 KB (374,784 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\ntmarta.dll

xpsp2res 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.76 MB (2,897,920 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\xpsp2res.dll

services 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 300.00 KB (307,200 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\services.exe

scesrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 806.50 KB (825,856 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\scesrv.dll

authz 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 220.50 KB (225,792 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\authz.dll

umpnpmgr 5.2.3790.2477 (srv03_sp1_gdr.050629-1534) 323.50 KB (331,264 bytes) 6/30/2005 2:06 AM Microsoft Corporation c:\windows\system32\umpnpmgr.dll

ncobjapi 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 120.50 KB (123,392 bytes) 10/3/2006 7:02 AM Microsoft Corporation c:\windows\system32\ncobjapi.dll

msvcp60 6.10.2240.8 941.50 KB (964,096 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\msvcp60.dll

eventlog 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 180.00 KB (184,320 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\eventlog.dll

lsass 5.2.3790.0 (srv03_rtm.030324-2048) 15.00 KB (15,360 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\lsass.exe

lsasrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.07 MB (2,166,784 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\lsasrv.dll

ntdsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 204.50 KB (209,408 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\ntdsapi.dll

dnsapi 5.2.3790.2745 (srv03_sp1_qfe.060712-0052) 428.50 KB (438,784 bytes) 7/12/2006 4:44 AM Microsoft Corporation c:\windows\system32\dnsapi.dll

samsrv 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 1.09 MB (1,140,224 bytes) 10/3/2006 7:02 AM Microsoft Corporation c:\windows\system32\samsrv.dll

cryptdll 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 68.50 KB (70,144 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\cryptdll.dll

msprivs 5.2.3790.0 (srv03_rtm.030324-2048) 46.00 KB (47,104 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\msprivs.dll

kerberos 5.2.3790.2690 (srv03_sp1_qfe.060425-1901) 942.50 KB (965,120 bytes) 4/25/2006 7:14 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) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\msv1_0.dll

iphlpapi 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 255.00 KB (261,120 bytes) 8/30/2006 4:45 AM Microsoft Corporation c:\windows\system32\iphlpapi.dll

netlogon 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 956.00 KB (978,944 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\netlogon.dll

w32time 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 565.00 KB (578,560 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\w32time.dll

schannel 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 456.00 KB (466,944 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\schannel.dll

wdigest 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 210.00 KB (215,040 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wdigest.dll

rsaenh 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 415.98 KB (425,960 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\rsaenh.dll

rassfm 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 68.50 KB (70,144 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\rassfm.dll

kdcsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 596.00 KB (610,304 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\kdcsvc.dll

ntdsa 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 4.05 MB (4,249,600 bytes) 8/30/2006 4:45 AM Microsoft Corporation c:\windows\system32\ntdsa.dll

ntdsatq 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 79.50 KB (81,408 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\ntdsatq.dll

mswsock 5.2.3790.2778 (srv03_sp1_qfe.060825-0235) 764.50 KB (782,848 bytes) 8/26/2006 6:19 PM Microsoft Corporation c:\windows\system32\mswsock.dll

esent 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 2.65 MB (2,776,064 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\esent.dll

scecli 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 459.50 KB (470,528 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\scecli.dll

ws03res 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 792.50 KB (811,520 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\ws03res.dll

hnetcfg 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.04 MB (1,094,144 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\hnetcfg.dll

wshtcpip 5.2.3790.0 (srv03_rtm.030324-2048) 38.00 KB (38,912 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wshtcpip.dll

pstorsvc 5.2.3790.0 (srv03_rtm.030324-2048) 56.00 KB (57,344 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\pstorsvc.dll

psbase 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 167.50 KB (171,520 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\psbase.dll

dssenh 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 363.98 KB (372,712 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\dssenh.dll

svchost 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 36.00 KB (36,864 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\svchost.exe

rpcss 5.2.3790.2736 (srv03_sp1_qfe.060629-0146) 839.50 KB (859,648 bytes) 6/28/2006 11:51 PM Microsoft Corporation c:\windows\system32\rpcss.dll

wkssvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 315.50 KB (323,072 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wkssvc.dll

wiarpc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 76.00 KB (77,824 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wiarpc.dll

dmserver 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 52.00 KB (53,248 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\dmserver.dll

es 2001.12.4720.2736 (srv03_sp1_qfe.060629-0146) 685.50 KB (701,952 bytes) 6/28/2006 11:50 PM Microsoft Corporation c:\windows\system32\es.dll

srvsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 197.50 KB (202,240 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\srvsvc.dll

sacsvr 5.2.3790.0 (srv03_rtm.030324-2048) 27.50 KB (28,160 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\sacsvr.dll

trkwks 5.2.3790.0 (srv03_rtm.030324-2048) 246.00 KB (251,904 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\trkwks.dll

wmisvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 445.50 KB (456,192 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wbem\wmisvc.dll

vssapi 5.2.3790.2476 (srv03_sp1_qfe.050628-1725) 1.57 MB (1,642,496 bytes) 6/28/2005 11:49 PM Microsoft Corporation c:\windows\system32\vssapi.dll

atl 3.00.2282 348.00 KB (356,352 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\atl.dll

sens 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 98.00 KB (100,352 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\sens.dll

comsvcs 2001.12.4720.2781 (srv03_sp1_qfe.060830-0223) 3.21 MB (3,361,792 bytes) 8/30/2006 4:44 AM Microsoft Corporation c:\windows\system32\comsvcs.dll

wbemcore 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.94 MB (2,038,784 bytes) 3/25/2005 4:00 AM 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) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wbem\esscli.dll

wbemcomn 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 665.50 KB (681,472 bytes) 10/3/2006 7:02 AM Microsoft Corporation c:\windows\system32\wbem\wbemcomn.dll

fastprox 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.63 MB (1,710,592 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wbem\fastprox.dll

wmiutils 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 302.00 KB (309,248 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wbem\wmiutils.dll

repdrvfs 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 649.00 KB (664,576 bytes) 3/25/2005 4:00 AM 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) 3/25/2005 4:00 AM 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) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wbem\wbemess.dll

ncprov 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 146.00 KB (149,504 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wbem\ncprov.dll

wbemsvc 5.2.3790.0 (srv03_rtm.030324-2048) 62.50 KB (64,000 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wbem\wbemsvc.dll

netman 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 705.50 KB (722,432 bytes) 8/30/2006 4:45 AM Microsoft Corporation c:\windows\system32\netman.dll

netshell 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 2.95 MB (3,089,920 bytes) 8/30/2006 4:45 AM Microsoft Corporation c:\windows\system32\netshell.dll

rtutils 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 91.50 KB (93,696 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\rtutils.dll

credui 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 311.00 KB (318,464 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\credui.dll

clusapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 158.00 KB (161,792 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\clusapi.dll

mprapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 265.00 KB (271,360 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\mprapi.dll

activeds 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 581.50 KB (595,456 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\activeds.dll

adsldpc 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 325.50 KB (333,312 bytes) 8/30/2006 4:44 AM Microsoft Corporation c:\windows\system32\adsldpc.dll

rasapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 632.50 KB (647,680 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\rasapi32.dll

rasman 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 170.00 KB (174,080 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\rasman.dll

tapi32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 518.00 KB (530,432 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\tapi32.dll

wzcsvc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 818.00 KB (837,632 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wzcsvc.dll

wmi 5.2.3790.0 (srv03_rtm.030324-2048) 5.00 KB (5,120 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wmi.dll

dhcpcsvc 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 300.50 KB (307,712 bytes) 8/30/2006 4:45 AM Microsoft Corporation c:\windows\system32\dhcpcsvc.dll

wininet 6.00.3790.2781 (srv03_sp1_qfe.060830-0223) 1.62 MB (1,701,376 bytes) 10/3/2006 7:02 AM Microsoft Corporation c:\windows\system32\wininet.dll

wzcsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 86.50 KB (88,576 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\wzcsapi.dll

rasdlg 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.44 MB (1,509,888 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\rasdlg.dll

rasadhlp 5.2.3790.2745 (srv03_sp1_qfe.060712-0052) 18.00 KB (18,432 bytes) 7/12/2006 4:44 AM Microsoft Corporation c:\windows\system32\rasadhlp.dll

netcfgx 5.2.3790.2520 (srv03_sp1_qfe.050830-1536) 2.01 MB (2,104,320 bytes) 8/30/2005 12:41 PM Microsoft Corporation c:\windows\system32\netcfgx.dll

winipsec 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 83.00 KB (84,992 bytes) 3/25/2005 4:00 AM Microsoft Corporation c:\windows\system32\winipsec.dll

termsrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 680.00 KB (696,320 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\termsrv.dll

icaapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 33.50 KB (34,304 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\icaapi.dll

mstlsapi 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 340.50 KB (348,672 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\mstlsapi.dll

rdpwsx 5.2.3790.2781 (srv03_sp1_qfe.060830-0223) 324.63 KB (332,424 bytes) 10/3/2006 7:02 AM
Microsoft Corporation
c:\windows\system32\rdpwsx.dll

rdpclip 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 211.00 KB (216,064 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\rdpclip.exe

wsock32 5.2.3790.0 (srv03_rtm.030324-2048) 23.00 KB (23,552 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\wsock32.dll

urlmon 6.00.3790.2756 (srv03_sp1_gdr.060725-0040) 1.54 MB (1,614,848 bytes) 7/28/2006 4:25 AM
Microsoft Corporation
c:\windows\system32\urlmon.dll

explorer 6.00.3790.2781 (srv03_sp1_qfe.060830-0223) 1.64 MB (1,716,224 bytes) 10/3/2006 7:01 AM
Microsoft Corporation
c:\windows\explorer.exe

browseui 6.00.3790.2781 (srv03_sp1_qfe.060830-0223) 2.42 MB (2,541,568 bytes) 10/3/2006 7:01 AM
Microsoft Corporation
c:\windows\system32\browseui.dll

shdocvw 6.00.3790.2781 (srv03_sp1_qfe.060830-0223) 3.51 MB (3,679,744 bytes) 10/3/2006 7:02 AM
Microsoft Corporation
c:\windows\system32\shdocvw.dll

cryptui 5.131.3790.1830 (srv03_sp1_rtm.050324-1447) 1.11 MB (1,159,168 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\cryptui.dll

apphelp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 301.50 KB (308,736 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\apphelp.dll

themeui 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 891.00 KB (912,384 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\themeui.dll

msimg32 5.2.3790.0 (srv03_rtm.030324-2048) 7.00 KB (7,168 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\msimg32.dll

actxprxy 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 237.00 KB (242,688 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\actxprxy.dll

linkinfo 5.2.3790.2521 (srv03_sp1_gdr.050831-1530) 48.50 KB (49,664 bytes) 9/27/2005 9:28 AM
Microsoft Corporation
c:\windows\system32\linkinfo.dll

ntshrui 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 244.00 KB (249,856 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\ntshrui.dll

msi 3.1.4000.2781 5.70 MB (5,975,552 bytes) 10/3/2006 7:01 AM
Microsoft Corporation
c:\windows\system32\msi.dll

webcheck 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 699.00 KB (715,776 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\webcheck.dll

stobject 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 175.00 KB (179,200 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\stobject.dll

batmeter 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 61.00 KB (62,464 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\batmeter.dll

powrprof 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 44.00 KB (45,056 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\powrprof.dll

cmd 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 507.50 KB (519,680 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\cmd.exe

msinfo32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 72.00 KB (73,728 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\program files\common files\microsoft shared\msinfo\msinfo32.exe

mfc42u 6.50.4245.0 3.35 MB (3,510,272 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\mfc42u.dll

msinfo 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 1.26 MB (1,321,472 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\pchealth\helpctr\binaries\msinfo.dll

riched32 5.2.3790.0 (srv03_rtm.030324-2048) 5.00 KB (5,120 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\riched32.dll

riched20 5.31.23.1225 1.38 MB (1,442,816 bytes) 10/3/2006 7:02 AM
Microsoft Corporation
c:\windows\system32\riched20.dll

wbemprox 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 65.00 KB (66,560 bytes) 3/25/2005 4:00 AM
Microsoft Corporation
c:\windows\system32\wbem\wbemprox.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 Stopped
Disabled 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\framewor
k\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\framewor
k64\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 Stopped
Manual 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 HBA Discovery Emulex HBA Discovery
Stopped Manual Own
Process c:\program files
(x86)\emulex\util\common\hbadiscsrvr.exe
Normal LocalSystem 0

Emulex HBA Management Emulex HBA
Management Stopped Manual Own
Process c:\program files
(x86)\emulex\util\common\rmserver.exe Normal
LocalSystem 0
Emulex SvcMgr Emulex SvcMgr
Stopped Manual Own
Process c:\program files
(x86)\emulex\util\common\hbahsmgr.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 Stopped
Disabled Share Process
c:\windows\system32\svchost.exe -
k netsvcs Normal LocalSystem 0

HID Input Service HidServ Stopped
Disabled 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

InstallDriver Table Manager IDriverT
Stopped Manual Own
Process "c:\program files (x86)\common
files\installshield\driver\1150\intel
32\idrivert.exe" Ignore
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\lssrv.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

SQL Server FullText Search (MSSQLSERVER)
msftesql Stopped Disabled
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

Plug and Play PlugPlay Running Auto
Share Process
c:\windows\system32\services.exe
Normal LocalSystem 0

IPSEC Services PolicyAgent Stopped
Disabled 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
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 Stopped
Disabled 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

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
SQL Server Agent (MSSQLSERVER) SQLSERVERAGENT Stopped
LocalSystem 0
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
Disabled 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 Auto
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

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

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\wmiap
srv.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
Emulex All Users:Emulex 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\Configuration Tools
All Users:Microsoft SQL Server
2005\Configuration 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
SQLSAPPHIRE\Administrator:Access
ories SQLSAPPHIRE\Administrator

Accessories\Accessibility
SQLSAPPHIRE\Administrator:Access
ories\Accessibility
SQLSAPPHIRE\Administrator

Accessories\Entertainment
SQLSAPPHIRE\Administrator:Access
ories\Entertainment
SQLSAPPHIRE\Administrator

Administrative Tools
SQLSAPPHIRE\Administrator:Admini
strative Tools SQLSAPPHIRE\Administrator

hp MSA Utilities
SQLSAPPHIRE\Administrator:hp
MSA Utilities SQLSAPPHIRE\Administrator

Startup
SQLSAPPHIRE\Administrator:Startu
p SQLSAPPHIR E\Administrator


[Startup Programs]

Program Command User Name Location

desktop desktop.ini NT
AUTHORITY\SYSTEM Startup
desktop desktop.ini
SQLSAPPHIRE\Administrator
Startup
desktop desktop.ini .DEFAULT Startup

desktop desktop.ini All Users Common
Startup

UserFaultCheck
%systemroot%\system32\dumprep
0 -u All Users
HKLM\SOFTWARE\Microsoft\Windo
ws\CurrentVersion\Run
KernelFaultCheck
%systemroot%\system32\dumprep
0 -k All Users
HKLM\SOFTWARE\Microsoft\Windo
ws\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"
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
Unknown Unknown Unknown
Unknown Unknown
Unknown

[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 Low
Internet Medium
Restricted sites Custom

Microsoft SQL Server 2005 Startup Parameters

sqlservr.exe -c -x -T661 -T834 -T836 -T3502 -T8011 -T8012 -T8018 -T8019 -T8710 -T8744

where
-c - Run as console app
-x - Disable caches
-T661 - Disable the ghost record removal process
-T834 - Large pages
-T836 - Make use of all physical memory
-T3502 - Send checkpoint state changes to errorlog
-T8011 - Disable ring buffer for resource monitor
-T8012 - Disable ring buffer for schedulers
-T8018 - Disable exception ring buffer
-T8019 - Disable stack collection for exception ring buffer
-T8710 - Disable HP spools
-T8744 - Disable pre-fetch

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],1439[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 2005 could use large amounts of physical memory.

FC2143 Driver Settings

Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\elxstor]
"ErrorControl"=dword:00000001
"Group"="SCSI miniport"
"Start"=dword:00000000
"Tag"=dword:00000027
"Type"=dword:00000001
"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

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\elxstor\Parameters]
"BusType"=dword:00000006

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\elxstor\Parameters\Device]
"DriverParameter"="NodeTimeOut=10;LinkTimeOut=40;QueueTarget=1;EmulexOption=0x7cbd30ca;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\elxstor\Parameters\Device0]
"DriverParameter"="CoalesceRspCnt=0;NodeTimeOut=10;LinkTimeOut=40;QueueTarget=1;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\elxstor\Parameters\Device1]
"DriverParameter"="CoalesceRspCnt=0;NodeTimeOut=10;LinkTimeOut=40;QueueTarget=1;"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\elxstor\Parameters\PnpInterface]
"5"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\elxstor\Enum]
"0"="PCI\\VEN_10DF&DEV_F0A5&SUBSYS_F0A510DF&REV_01\\4&2c178b65&0&08"
"Count"=dword:00000002
"NextInstance"=dword:00000002
"1"="PCI\\VEN_10DF&DEV_F0A5&SUBSYS_F0A510DF&REV_01\\4&2c178b65&0&09"

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 0 0
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 full-text crawl range 0 256 4 4
max degree of parallelism 0 64 4 4
max server memory (MB) 16 2147483647 190000 190000
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 1 1
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 1 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: 06/08/07 13:28:31
System Name: DL1
[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 DL1
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 1.15, 10/27/2005

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 Daylight Time
Total Physical Memory 1,022.93 MB
Available Physical Memory 760.43 MB
Total Virtual Memory 2.91 GB
Available Virtual Memory 2.68 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

I/O Port 0x00002000-0x00002FFF Intel(R) E7520 PCI Express Root Port C0 - 3599

I/O Port 0x00002000-0x00002FFF Intel(R) 6700PXH PCI Express-to-PCI Bridge A - 0329

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 0xDD200000-0xDD2FFFFF Intel(R) E7520 PCI Express Root Port B1 - 3598
Memory Address 0xDD200000-0xDD2FFFFF Broadcom NetXtreme Gigabit Ethernet #4

Memory Address 0xA0000-0xBFFFF PCI bus

Memory Address 0xA0000-0xBFFFF RAGE XL PCI Family (Microsoft Corporation)

Memory Address 0xDD300000-0xDD4FFFFF Intel(R) E7520 PCI Express Root Port C0 - 3599
Memory Address 0xDD300000-0xDD4FFFFF Intel(R) 6700/6702PXH I/OxAPIC Interrupt Controller A - 0326

Memory Address 0xDD100000-0xDD1FFFFF Intel(R) E7525/E7520 PCI Express Root Port B0 - 3597
Memory Address 0xDD100000-0xDD1FFFFF Broadcom NetXtreme Gigabit Ethernet #3

[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
0x00002000-0x00002FFF	Intel(R) E7520 PCI Express Root Port C0 - 3599	OK
0x00002000-0x00002FFF	Intel(R) 6700PXH PCI Express-to-PCI Bridge A - 0329	OK
0x00001400-0x0000141F	Intel(R) 82801EB USB Universal Host Controller - 24D2	OK
0x00001420-0x0000143F	Intel(R) 82801EB USB Universal Host Controller - 24D4	OK
0x00003000-0x000030FF	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 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
0xCC000-0xCFFFF PCI bus OK

0xD0000-0xD3FFF PCI bus OK

0xD4000-0xD7FFF PCI bus OK

0xD8000-0xDBFFF PCI bus OK

0x40000000-0xFEBFFFFF PCI bus OK

0xDD100000-0xDD1FFFFF Intel(R) E7525/E7520 PCI Express Root Port B0 - 3597 OK

0xDD100000-0xDD1FFFFF Broadcom NetXtreme Gigabit Ethernet #3 OK
0xDD200000-0xDD2FFFFF Intel(R) E7520 PCI Express Root Port B1 - 3598 OK

0xDD200000-0xDD2FFFFF Broadcom NetXtreme Gigabit Ethernet #4 OK
0xDD300000-0xDD4FFFFF Intel(R) E7520 PCI Express Root Port C0 - 3599 OK

0xDD300000-0xDD4FFFFF Intel(R) 6700/6702PXH I/OxAPIC Interrupt Controller A - 0326 OK
0xDD400000-0xDD4FFFFF Intel(R) 6700PXH PCI Express-to-PCI Bridge A - 0329 OK

0xDD301000-0xDD301FFF Intel(R) 6700PXH I/OxAPIC Interrupt Controller B - 0327 OK

0xDD001000-0xDD0013FF Intel(R) 82801EB USB2 Enhanced Host Controller - 24DD OK

0xDE000000-0xDEFFFFFF RAGE XL PCI Family (Microsoft Corporation) OK
0xDD500000-0xDD500FFF 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\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\sl_anet.acm Sipro Lab Telecom Inc. Sipro Lab Telecom Audio Codec OK
C:\WINDOWS\system32\SL_ANET.ACM 3.02 84.00 KB (86,016 bytes) 4/12/2005 1:43 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\msg723.acm
Microsoft Corporation
OK
C:\WINDOWS\system32\MSG723.ACM 5.2.3790.1830 120.00 KB (122,880 bytes) 4/14/2005 10:01 AM

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\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\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
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

[Video Codecs]

CODEC Manufacturer Description Status
File Version Size
Creation Date
c:\windows\system32\msh261.drv
Microsoft Corporation
OK
C:\WINDOWS\system32\MSH261.DRV 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.DLL 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.DLL 5.2.3790.0 (srv03_rtm.030324-2048) 16.50 KB (16,896 bytes)
3/24/2003 5:48 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.DLL 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.DRV 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 Type Not Available
Adapter Description ATI Technologies Inc.

Adapter RAM Not Available
Installed Drivers Not Available
Driver Version Not Available
INF File 5.10.3663.6013 (atiixpad.inf section)
Color Planes ati2mpad
Color Table Entries Not Available
Resolution Not Available
Bits/Pixel Not Available
Memory Address 0xDE000000-0xDEFFFFFF
I/O Port 0x00003000-0x000030FF
Memory Address 0xDD500000-0xDD500FFF
IRQ Channel IRQ 16
I/O Port 0x000003B0-0x000003BB
I/O Port 0x000003C0-0x000003DF
Memory Address 0xA0000-0xBFFFF

Driver
c:\windows\system32\drivers\ati2mpad.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\i8042prt.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 3
Status Error
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\i8042prt.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 6/3/2007 11:00 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 6/3/2007 11:00 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 6/3/2007 11:00 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 6/3/2007 11:00 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\rasppoe.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 6/3/2007 11:00 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 6/3/2007 11:00 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 6/3/2007 11:00 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 6/3/2007 11:00 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 6/3/2007 11:00 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 6/3/2007 11:00 AM
Index 10
Service Name b57w2k
IP Address 15.1.102.1
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 00:16:35:9F:68:82
Memory Address 0xDD100000-0xDD1FFFFF
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 6/3/2007 11:00 AM
Index 11
Service Name b57w2k
IP Address 192.168.0.1
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 00:16:35:9F:68:83
Memory Address 0xDD200000-0xDD2FFFFF
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}] 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_{C09F1971-DD34-4CF7-86C3-79FC40F767E0}] DATAGRAM 1
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_{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 53.71 GB (57,665,863,680 bytes)

Volume Name
Volume Serial Number DCCFCBF1

Drive Z:
Description Network Connection
Provider Name \\hpwieshare\wie

[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
Name QLogic QLA23xx PCI Fibre Channel Adapter
Manufacturer QLogic
Status Error
PNP Device ID
PCI\VEN_1077&DEV_2312&SUBSYS_010C1077&REV_02\5&55F0281&0&080030

Driver
c:\windows\system32\drivers\ql2300.sys (8.2.2.10 (W2K VI), 435.41 KB (445,858 bytes), 3/16/2005 8:45 AM)

[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
QLogic QLA23xx PCI Fibre Channel Adapter
PCI\VEN_1077&DEV_2312&SUBSYS_010C1077&REV_02\5&55F0281&0&080030
This device is disabled.
PS/2 Compatible Mouse
ACPI\PNP0F13\4&369939D9&0
This device is not present, is not working properly, or does not have all its drivers installed.

[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.s		
ys	Kernel Driver	Yes	Boot
	Running	OK	Normal
	No	Yes	
acpiec	ACPIEC		
	c:\windows\system32\drivers\acpie		
c.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.sy		
s	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\alker		
nel.sys	Kernel Driver	Yes	Manual
	Running	OK	Normal
	No	Yes	
asyncmac	RAS Asynchronous Media Driver		
	c:\windows\system32\drivers\async		
mac.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
atmarpc	ATM ARP Client Protocol	Yes	Kernel
	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
	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
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 Yes
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
No Yes
parport Parport
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
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 No Boot
Stopped OK Normal
No No
qlvika qlvika
c:\windows\system32\drivers\qlvika
.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
No Yes
rdpdr Terminal Server Device Redirector
Driver
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
secdrv Secdrv
c:\windows\system32\drivers\secdr
v.sys Kernel Driver No Manual
Stopped OK Normal
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
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 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
x86perfsys Low Overhead Profiler No
\??\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 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
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

qlvika Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_QLVIKA\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 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

modem Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_MODEM\0000

mnmdd Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_MNMDD\0000
ksecdd Not Available LEGACYDRIVER
Not Available 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 Not Available
ROOT\LEGACY_IPSEC\0000

IntelIde Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_INTELIDE\0000

HTTP Not Available LEGACYDRIVER
Not Available 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 Not Available
ROOT\LEGACY_GPC\0000
Fips Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_FIPS\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

Beep Not Available LEGACYDRIVER
Not Available 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 Not Available
ROOT\LEGACY_ALKERNEL\0000

AFD Networking Support Environment Not
Available LEGACYDRIVER Not
Available 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
&SIGNATUREBD21BD21OFFSET7E00LENGTH12A
1C90400

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_____
_____BACE1G10\324C463147
3447322020202020202020202020
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\PNP0A05\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
Default Monitor Yes
MONITOR 5.1.2001.0
6/6/2001 (Standard monitor types) monitor.inf Not Available
DISPLAY\DEFAULT_MONITOR\5&B6946BC&0&80000000&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&SUBSYS_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

QLOGIC PSEUDO LUN Yes SYSTEM
8.2.2.10 4/16/2003 QLogic Corp oem2.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&PROD_PSEUDO_LUN&REV_\6&21B87FF4&0&07F0

QLogic QLA23xx PCI Fibre Channel Adapter
Yes SCSIADAPTER
8.2.2.10 4/16/2003 QLogic
oem1.inf Not Available
PCI\VEN_1077&DEV_2312&SUBSYS_010C1077&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
PCI bus Yes SYSTEM
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 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\;C:\Program Files\Microsoft
SQL Server\90\Tools\binn\;C:\Program
Files\Microsoft SQL
Server\90\DTS\Binn\;C:\Program Files\Microsoft
SQL
Server\90\Tools\Binn\VSShell\Common7\IDE\
<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 DL1\Administrator

TMP %USERPROFILE%\Local
Settings\Temp DL1\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: \\hpwieshare\wie Disk
Persistent Connection
redmond\b-ericd

[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 492 11
204800 1413120
6/3/2007 11:00 AM Not
Available Not Available Not Available
csrss.exe Not Available 588 13
Not Available Not Available
6/3/2007 11:00 AM Not
Available Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe
644 13 204800
1413120 6/3/2007 11:00 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
688 9 204800
1413120 6/3/2007 11:00 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
716 9 204800
1413120 6/3/2007 11:00 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
904 8 204800
1413120 6/3/2007 11:00 AM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 14.00 KB
(14,336 bytes) 4/14/2005 10:01 AM

svchost.exe Not Available 984 8
Not Available Not Available
6/3/2007 11:00 AM Not
Available Not Available Not Available
svchost.exe Not Available 1076 8
Not Available Not Available
6/3/2007 11:00 AM Not
Available Not Available Not Available
svchost.exe Not Available 1152 8
Not Available Not Available
6/3/2007 11:00 AM Not
Available Not Available Not Available
svchost.exe c:\windows\system32\svchost.exe
1164 8 204800
1413120 6/3/2007 11:00 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
2000 8 204800
1413120 6/3/2007 11:01 AM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 57.00 KB
(58,368 bytes) 4/14/2005 10:01 AM

msdtc.exe Not Available 2032 8
Not Available Not Available
6/3/2007 11:01 AM Not
Available Not Available Not Available
aclient.exe c:\program
files\altiris\aclient\aclient.exe 368
8 204800 1413120
6/3/2007 11:01 AM 6.5.241
4.75 MB (4,984,908 bytes)
5/3/2005 8:59 AM
svchost.exe c:\windows\system32\svchost.exe
464 8 204800
1413120 6/3/2007 11:01 AM
5.2.3790.1830
(srv03_sp1_rtm.050324-1447) 14.00 KB
(14,336 bytes) 4/14/2005 10:01 AM

svchost.exe Not Available 848 8
Not Available Not Available
6/3/2007 11:01 AM Not
Available Not Available Not Available
rsys.exe Not Available 1072 8
Not Available Not Available
6/3/2007 11:01 AM Not
Available Not Available Not Available

```
svchost.exe  c:\windows\system32\svchost.exe
             1960        8           204800
             1413120     6/3/2007 11:01 AM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM

wmiprvse.exe            Not Available 1472
             8          Not Available Not
Available    6/3/2007 11:02 AM       Not
Available    Not Available Not Available
dllhost.exe  c:\windows\system32\dllhost.exe
             1652       8           204800
             1413120    6/3/2007 11:31 AM
             5.2.3790.0 (srv03_rtm.030324-
2048)        5.50 KB (5,632 bytes)
             4/12/2005 1:42 PM
csrss.exe    Not Available 2780      13
             Not Available Not Available
             6/3/2007 11:33 AM       Not
Available    Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe
             2804       13          204800
             1413120    6/3/2007 11:33 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
             3068       8           204800
             1413120    6/3/2007 11:33 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    3344
             8          204800      1413120
             6/3/2007 11:33 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       3456
             8          204800      1413120
             6/3/2007 11:33 AM       6, 5, 241
             180.00 KB (184,320 bytes)
             5/3/2005 8:59 AM
logon.scr    Not Available 3596      4
             Not Available Not Available
             6/3/2007 11:43 AM       Not
Available    Not Available Not Available
telnet.exe   c:\windows\system32\telnet.exe
             4024       8           204800
             1413120    6/3/2007 7:23 PM
             5.2.3790.2442
(srv03_sp1_gdr.050510-1534)          74.00 KB
(75,776 bytes)          3/24/2005 7:46 PM

inetinfo.exe
             c:\windows\system32\inetsrv\inetin
fo.exe       30260      8           204800
             1413120    6/4/2007 1:50 PM
             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
             12888      8           204800
             1413120    6/4/2007 1:50 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          14.00 KB
(14,336 bytes)          4/14/2005 10:01 AM

mstsc.exe    c:\windows\system32\mstsc.exe
             21540      8           204800
             1413120    6/8/2007 11:48 AM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          410.50
KB (420,352 bytes)      4/14/2005 10:01 AM

cmd.exe      c:\windows\system32\cmd.exe
             7740       8           204800
             1413120    6/8/2007 1:10 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          379.00
KB (388,096 bytes)      4/12/2005 1:42 PM

wmiprvse.exe            Not Available 10284
             8          Not Available Not
Available    6/8/2007 1:12 PM        Not
Available    Not Available Not Available
taskmgr.exe  c:\windows\system32\taskmgr.exe
             30012      13          204800
             1413120    6/8/2007 1:12 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          164.50
KB (168,448 bytes)      4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             8080       8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             29972      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             28516      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             12060      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             22676      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             22088      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             9536       8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             15492      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             22184      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             28956      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             17140      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             27040      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             21320      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             15288      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM

msinfo32.exe c:\program files\common
files\microsoft shared\msinfo\msinfo32.exe
             10844      8           204800
             1413120    6/8/2007 1:26 PM
             5.2.3790.1830
(srv03_sp1_rtm.050324-1447)          42.00 KB
(43,008 bytes)          4/14/2005 10:01 AM
```

msinfo32.exe c:\program files\common files\microsoft shared\msinfo\msinfo32.exe
332 8 204800 1413120 6/8/2007 1:26 PM
5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 42.00 KB (43,008 bytes) 4/14/2005 10:01 AM

[Loaded Modules]

Name Version Size File Date Manufacturer Path

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

mprui 5.2.3790.0 (srv03_rtm.030324-2048) 49.00 KB (50,176 bytes)
4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\mprui.dll

netui2 5.2.3790.0 (srv03_rtm.030324-2048) 309.50 KB (316,928 bytes)
4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\netui2.dll

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

netmsg 5.2.3790.0 (srv03_rtm.030324-2048) 178.00 KB (182,272 bytes)
4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\netmsg.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 8.00.00.4487 288.00 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

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

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

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

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

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

gpkcsp 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 115.48 KB (118,248 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\gpkcsp.dll

scarddlg 5.2.3790.0 (srv03_rtm.030324-2048) 65.00 KB (66,560 bytes) 4/12/2005 1:42 PM Microsoft Corporation c:\windows\system32\scarddlg.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

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

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

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

gpkrsrc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 9.50 KB (9,728 bytes) 4/14/2005 10:01 AM Microsoft Corporation c:\windows\system32\gpkrsrc.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

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

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

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

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

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

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

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

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

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

xactsrv 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 90.00 KB (92,160 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\xactsrv.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

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

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

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

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

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

netcfgx 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 763.00 KB (781,312 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\netcfgx.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

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

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

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 5.31.23.1224 439.00 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

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

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

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

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

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

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

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

msi 3.1.4000.2435 2.76 MB (2,890,240 bytes) 2/1/2006 11:03 AM
Microsoft Corporation
c:\windows\system32\msi.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

browselc 6.00.3790.0 (srv03_rtm.030324-2048) 62.00 KB (63,488 bytes)
4/12/2005 1:42 PM
Microsoft Corporation
c:\windows\system32\browselc.dll

mlang 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 577.50 KB (591,360 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\mlang.dll

zipfldr 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 333.50 KB (341,504 bytes) 4/14/2005 10:00 AM
Microsoft Corporation
c:\windows\system32\zipfldr.dll

shdoclc 6.00.3790.0 (srv03_rtm.030324-2048) 588.50 KB (602,624 bytes)
4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\shdoclc.dll

mydocs 6.00.3790.1830 (srv03_sp1_rtm.050324-1447) 90.00 KB (92,160 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\mydocs.dll

aclntusr 6, 5, 241 180.00 KB (184,320 bytes) 5/3/2005 8:59 AM
c:\program files\altiris\aclient\aclntusr.exe

telnet 5.2.3790.2442 (srv03_sp1_gdr.050510-1534) 74.00 KB (75,776 bytes) 3/24/2005 7:46 PM
Microsoft Corporation
c:\windows\system32\telnet.exe

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

imm32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 108.00 KB (110,592 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\imm32.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
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
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
mstsc 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 410.50 KB (420,352 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\mstsc.exe

mstscax 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 736.00 KB (753,664 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\mstscax.dll
msctf 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 311.00 KB (318,464 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\msctf.dll

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

taskmgr 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 164.50 KB (168,448 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\taskmgr.exe

vdmdbg 5.2.3790.0 (srv03_rtm.030324-2048) 25.00 KB (25,600 bytes)
4/12/2005 1:43 PM
Microsoft Corporation
c:\windows\system32\vdmdbg.dll

utildll 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 28.50 KB (29,184 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\windows\system32\utildll.dll

msinfo32 5.2.3790.1830 (srv03_sp1_rtm.050324-1447) 42.00 KB (43,008 bytes) 4/14/2005 10:01 AM
Microsoft Corporation
c:\program files\common files\microsoft shared\msinfo\msinfo32.exe

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

[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\inetin
fo.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 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

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

Office Source Engine ose Stopped
Manual Own Process
"c:\program files\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

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 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        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 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
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 DL1\Administrator:Accessories DL1\Administrator
Accessories\Accessibility DL1\Administrator:Accessories\Accessibility DL1\Administrator
Accessories\Communications DL1\Administrator:Accessories\Communications DL1\Administrator
Accessories\Communications\HyperTerminal DL1\Administrator:Accessories\Communications\HyperTerminal DL1\Administrator
Accessories\Entertainment DL1\Administrator:Accessories\Entertainment DL1\Administrator
Administrative Tools DL1\Administrator:Administrative Tools DL1\Administrator
Benchcraft DL1\Administrator:Benchcraft DL1\Administrator
QLogic Corporation DL1\Administrator:QLogic Corporation DL1\Administrator
QLogic Corporation\SANblade Control VIX DL1\Administrator:QLogic Corporation\SANblade Control VIX DL1\Administrator
Startup DL1\Administrator:Startup DL1\Administrator

[Startup Programs]

Program Command User Name Location

desktop desktop.ini NT AUTHORITY\SYSTEM desktop.ini DL1\Administrator
desktop desktop.ini .DEFAULT Startup
desktop desktop.ini All Users Common Startup
ACIntUsr c:\program files\altiris\aclient\acintusr.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
DDSContainerCtl Class 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 5:55:26 PM
C:\WINDOWS\system32
Microsoft Corporation
advpack.dll 6.0.3790.1830 98 KB
3/24/2005 5:55:28 PM
C:\WINDOWS\system32
Microsoft Corporation
asctrls.ocx 6.0.3790.0 90 KB
3/25/2003 5:00:00 AM
C:\WINDOWS\system32
Microsoft Corporation
browselc.dll 6.0.3790.0 62 KB
3/25/2003 5:00:00 AM
C:\WINDOWS\system32
browseui.dll 6.0.3790.2564 1,012 KB
Microsoft Corporation
11/7/2005 3:19:28 AM
C:\WINDOWS\system32
Microsoft Corporation
cdfview.dll 6.0.3790.1830 149 KB
3/24/2005 5:56:32 PM
C:\WINDOWS\system32
Microsoft Corporation
comctl32.dll 5.82.3790.1830 585 KB
3/24/2005 5:57:56 PM
C:\WINDOWS\system32
Microsoft Corporation
dxtrans.dll 6.3.3790.2564 208 KB
11/7/2005 3:19:28 AM
C:\WINDOWS\system32
Microsoft Corporation
dxtmsft.dll 6.3.3790.1830 355 KB
3/24/2005 6:00:58 PM
C:\WINDOWS\system32
Microsoft Corporation
iecont.dll <File Missing> Not Available Not Available Not Available Not Available
iecontlc.dll <File Missing> Not Available Not Available Not Available Not Available
iedkcs32.dll 16.0.3790.1830 324 KB
3/24/2005 6:04:58 PM
C:\WINDOWS\system32
Microsoft Corporation
iepeers.dll 6.0.3790.2564 248 KB
11/7/2005 3:19:28 AM
C:\WINDOWS\system32
Microsoft Corporation
iesetup.dll 6.0.3790.1830 61 KB
3/24/2005 6:04:58 PM
C:\WINDOWS\system32
Microsoft Corporation
ieuinit.inf Not Available 24 KB
3/24/2005 6:04:58 PM
C:\WINDOWS\system32 Not Available
iexplore.exe 6.0.3790.1830 92 KB
3/24/2005 6:04:58 PM
C:\Program Files\Internet Explorer
Microsoft Corporation
imgutil.dll 6.0.3790.1830 38 KB
3/24/2005 6:05:04 PM
C:\WINDOWS\system32
Microsoft Corporation
inetcpl.cpl 6.0.3790.1830 358 KB
3/24/2005 6:05:06 PM
C:\WINDOWS\system32
Microsoft Corporation
inetcplc.dll 6.0.3790.0 109 KB
3/25/2003 5:00:00 AM
C:\WINDOWS\system32
Microsoft Corporation
inseng.dll 6.0.3790.1830 94 KB
3/24/2005 6:05:06 PM
C:\WINDOWS\system32
Microsoft Corporation
mlang.dll 6.0.3790.1830 578 KB
3/24/2005 6:07:20 PM
C:\WINDOWS\system32
Microsoft Corporation
msencode.dll 2002.10.4.0 112 KB
3/25/2003 5:00:00 AM
C:\WINDOWS\system32

mshta.exe 6.0.3790.1830 30 KB
3/24/2005 6:07:26 PM
C:\WINDOWS\system32
Microsoft Corporation
mshtml.dll 6.0.3790.2577 3,040 KB
11/23/2005 6:06:18 PM
C:\WINDOWS\system32
Microsoft Corporation
mshtml.tlb 6.0.3790.1830 1,320 KB
3/24/2005 6:07:26 PM
C:\WINDOWS\system32
Microsoft Corporation
mshtmled.dll 6.0.3790.1830 455 KB
3/24/2005 6:07:26 PM
C:\WINDOWS\system32
Microsoft Corporation
mshtmler.dll 6.0.3790.1830 56 KB
3/24/2005 6:07:26 PM
C:\WINDOWS\system32
Microsoft Corporation
msident.dll 6.0.3790.1830 48 KB
3/24/2005 6:07:28 PM
C:\WINDOWS\system32
Microsoft Corporation
msidntld.dll 6.0.3790.0 15 KB
3/25/2003 5:00:00 AM
C:\WINDOWS\system32
Microsoft Corporation
msieftp.dll 6.0.3790.1830 244 KB
3/24/2005 6:07:28 PM
C:\WINDOWS\system32
Microsoft Corporation
msrating.dll 6.0.3790.1830 144 KB
3/24/2005 6:07:36 PM
C:\WINDOWS\system32
Microsoft Corporation
mstime.dll 6.0.3790.2564 524 KB
11/7/2005 3:19:29 AM
C:\WINDOWS\system32
Microsoft Corporation
occache.dll 6.0.3790.1830 94 KB
3/24/2005 6:08:34 PM
C:\WINDOWS\system32
Microsoft Corporation
proctexe.ocx 6.3.3790.1830 83 KB
3/24/2005 6:12:26 PM
C:\WINDOWS\system32 Intel
Corporation
sendmail.dll 6.0.3790.1830 56 KB
3/24/2005 6:13:36 PM
C:\WINDOWS\system32
Microsoft Corporation
shdoclc.dll 6.0.3790.0 589 KB
3/25/2003 5:00:00 AM
C:\WINDOWS\system32
Microsoft Corporation
shdocvw.dll 6.0.3790.2580 1,478 KB
12/1/2005 8:13:55 AM
C:\WINDOWS\system32
Microsoft Corporation
shfolder.dll 6.0.3790.1830 25 KB
3/24/2005 6:13:36 PM
C:\WINDOWS\system32
Microsoft Corporation
shlwapi.dll 6.0.3790.2564 314 KB
11/7/2005 3:19:29 AM
C:\WINDOWS\system32
Microsoft Corporation
tdc.ocx 1.3.0.3130 58 KB
3/25/2003 5:00:00 AM
C:\WINDOWS\system32
Microsoft Corporation
url.dll 6.0.3790.1830 37 KB
3/24/2005 6:26:12 PM
C:\WINDOWS\system32
Microsoft Corporation
urlmon.dll 6.0.3790.2564 675 KB
11/7/2005 3:19:30 AM
C:\WINDOWS\system32
Microsoft Corporation
webcheck.dll 6.0.3790.1830 273 KB
3/24/2005 6:26:16 PM
C:\WINDOWS\system32
Microsoft Corporation
wininet.dll 6.0.3790.2564 647 KB
11/7/2005 3:19:30 AM
C:\WINDOWS\system32
Microsoft Corporation

[Connectivity]

Item Value
Connection Preference Never dial

LAN Settings

AutoConfigProxy wininet.dll
AutoProxyDetectMode Disabled
AutoConfigURL
Proxy Enabled
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:00004e20
"PoolThreadLimit"=dword:00001f40
"MaxPoolThreads"=dword:00004e20
"ThreadTimeout"=dword:00015180

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo\Performance]
"Library"="infoctrs.dll"
"Open"="OpenINFOPerformanceData"
"Close"="CloseINFOPerformanceData"

```
"Collect"="CollectINFOPerformanceData"
"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\CurrentControl
Set\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,00,20,00,69,00,69,00,73,00,73,00,76,00,63,0
0,73,00,00,00
"DisplayName"="World Wide Web Publishing
Service"
"DependOnService"=hex(7):52,00,50,00,43,00,5
3,00,53,00,00,00,48,00,54,00,54,00,\

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,\

00,01,00,00,00,01,00,00,00,01,00,00,00,01,00,0
0,00,01,00,00,00,01,00,00,00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControl
Set\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\CurrentCont rol
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

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\T
PCC]
"Path"="C:\\Inetpub\\wwwroot\\"
"NumberOfDeliveryThreads"=dword:00000005
"MaxConnections"=dword:00004e20
"MaxPendingDeliveries"=dword:000009c4
"DB_Protocol"="ODBC"
"TxnMonitor"="COM"
"DbServer"="tcp:192.168.1.1,1436"
"DbName"="tpcc"
"DbUser"="sa"
"DbPassword"="ssdl"
"COM_SinglePool"="YES"
"ConnectDelay"=dword:00000001
"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
"Domain"=""
"Hostname"="dl1"
"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

Benchcraft Profile

```
Profile:      SQLSapphire 3 tier
File Path:    D:\SQLSapphire\Runs\Three Tier\6-
3-2007\SQLSapphire 3 tier.xml
Version:      5

              Number of Engines: 32

                        Name: DRIVER01
                        Description:
                        Directory:
C:\DRIVER1.log
                        Machine: CL1
                        Parameter Set: Audit
                        Index: 50000000
                        Seed: 73660
                        Configured Users:
9660
                        Pipe Name: DRIVER01
                        Connect Rate: 50
                        Start Rate: 0
                        Max. Concurrency: -1
                        Concurrency Rate: 10
                        CLIENT_NURAND:
233
                        CPU: 0
                        Additional Options:

                        Name: DRIVER02
                        Description:
                        Directory:
C:\DRIVER2.log
                        Machine: CL1
                        Parameter Set: Audit
                        Index: 75000000
                        Seed: 73660
                        Configured Users:
9660
                        Pipe Name: DRIVER02
                        Connect Rate: 50
                        Start Rate: 0
                        Max. Concurrency: -1
                        Concurrency Rate: 10
                        CLIENT_NURAND:
233
                        CPU: 1
                        Additional Options:

                        Name: DRIVER03
                        Description:
                        Directory:
C:\DRIVER3.log
                        Machine: CL2
                        Parameter Set: Audit
                        Index: 100000000
                        Seed: 73660
```

9660

233

C:\DRIVER4.log

9660

233

C:\DRIVER5.log

8910

233

C:\DRIVER6.log

8910

233

Configured Users:

Pipe Name: DRIVER03
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 0
Additional Options:

Name: DRIVER04
Description:
Directory:

Machine: CL2
Parameter Set: Audit
Index: 125000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER04
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 1
Additional Options:

Name: DRIVER05
Description:
Directory:

Machine: CL3
Parameter Set: Audit
Index: 150000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER05
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 0
Additional Options:

Name: DRIVER06
Description:
Directory:

Machine: CL3
Parameter Set: Audit
Index: 175000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER06
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 1
Additional Options:

Name: DRIVER07
Description:

C:\DRIVER7.log

8910

233

C:\DRIVER8.log

8910

233

C:\DRIVER9.log

9000

233

C:\DRIVER10.log

9000

233

Directory:
Machine: CL4
Parameter Set: Audit
Index: 200000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER07
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 0
Additional Options:

Name: DRIVER08
Description:
Directory:

Machine: CL4
Parameter Set: Audit
Index: 225000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER08
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 1
Additional Options:

Name: DRIVER09
Description:
Directory:

Machine: CL5
Parameter Set: Audit
Index: 250000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER09
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 0
Additional Options:

Name: DRIVER10
Description:
Directory:

Machine: CL5
Parameter Set: Audit
Index: 275000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER10
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 1

C:\DRIVER11.log

9000

233

C:\DRIVER12.log

9000

233

C:\DRIVER13.log

9660

233

C:\DRIVER14.log

9660

Additional Options:
Name: DRIVER11
Description:
Directory:

Machine: CL6
Parameter Set: Audit
Index: 300000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER11
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 0
Additional Options:

Name: DRIVER12
Description:
Directory:

Machine: CL6
Parameter Set: Audit
Index: 325000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER12
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 1
Additional Options:

Name: DRIVER13
Description:
Directory:

Machine: CL7
Parameter Set: Audit
Index: 350000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER13
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 0
Additional Options:

Name: DRIVER14
Description:
Directory:

Machine: CL7
Parameter Set: Audit
Index: 375000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER14
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1

Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 1
Additional Options:

Name: DRIVER15
Description:
Directory:

C:\DRIVER15.log

Machine: CL8
Parameter Set: Audit
Index: 400000000
Seed: 73660
Configured Users:

9660

Pipe Name: DRIVER15
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 0
Additional Options:

Name: DRIVER16
Description:
Directory:

C:\DRIVER16.log

Machine: CL8
Parameter Set: Audit
Index: 425000000
Seed: 73660
Configured Users:

9660

Pipe Name: DRIVER16
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 1
Additional Options:

Name: DRIVER17
Description:
Directory:

C:\DRIVER17.log

Machine: CL9
Parameter Set: Audit
Index: 450000000
Seed: 73660
Configured Users:

9000

Pipe Name: DRIVER17
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 0
Additional Options:

Name: DRIVER18
Description:
Directory:

C:\DRIVER18.log

Machine: CL9
Parameter Set: Audit
Index: 475000000
Seed: 73660

9000

233

C:\DRIVER19.log

9000

233

C:\DRIVER20.log

9000

233

C:\DRIVER21.log

9660

233

C:\DRIVER22.log

Configured Users:
Pipe Name: DRIVER18
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 1
Additional Options:

Name: DRIVER19
Description:
Directory:

Machine: CL10
Parameter Set: Audit
Index: 500000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER19
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 0
Additional Options:

Name: DRIVER20
Description:
Directory:

Machine: CL10
Parameter Set: Audit
Index: 525000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER20
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 1
Additional Options:

Name: DRIVER21
Description:
Directory:

Machine: CL11
Parameter Set: Audit
Index: 550000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER21
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 0
Additional Options:

Name: DRIVER22
Description:
Directory:

9660

233

C:\DRIVER23.log

9660

233

C:\DRIVER24.log

9660

233

C:\DRIVER25.log

9660

233

Parameter Set: Audit
Machine: CL11
Index: 575000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER22
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 1
Additional Options:

Name: DRIVER23
Description:
Directory:

Machine: CL12
Parameter Set: Audit
Index: 600000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER23
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 0
Additional Options:

Name: DRIVER24
Description:
Directory:

Machine: CL12
Parameter Set: Audit
Index: 625000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER24
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 1
Additional Options:

Name: DRIVER25
Description:
Directory:

Machine: CL13
Parameter Set: Audit
Index: 650000000
Seed: 73660
Configured Users:

Pipe Name: DRIVER25
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

CPU: 0
Additional Options:

Name: DRIVER26
Description:
Directory:

C:\DRIVER26.log

Machine: CL13
Parameter Set: Audit
Index: 675000000
Seed: 73660
Configured Users:

9660

Pipe Name: DRIVER26
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 1
Additional Options:

Name: DRIVER27
Description:
Directory:

C:\DRIVER27.log

Machine: CL14
Parameter Set: Audit
Index: 700000000
Seed: 73660
Configured Users:

9660

Pipe Name: DRIVER27
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 0
Additional Options:

Name: DRIVER28
Description:
Directory:

C:\DRIVER28.log

Machine: CL14
Parameter Set: Audit
Index: 725000000
Seed: 73660
Configured Users:

9660

Pipe Name: DRIVER28
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 1
Additional Options:

Name: DRIVER29
Description:
Directory:

C:\DRIVER29.log

Machine: CL15
Parameter Set: Audit
Index: 750000000
Seed: 73660
Configured Users:

8910

Pipe Name: DRIVER29
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 0
Additional Options:

Name: DRIVER30
Description:
Directory:

C:\DRIVER30.log

Machine: CL15
Parameter Set: Audit
Index: 775000000
Seed: 73660
Configured Users:

8910

Pipe Name: DRIVER30
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 1
Additional Options:

Name: DRIVER31
Description:
Directory:

C:\DRIVER31.log

Machine: CL16
Parameter Set: Audit
Index: 800000000
Seed: 73660
Configured Users:

8910

Pipe Name: DRIVER31
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 0
Additional Options:

Name: DRIVER32
Description:
Directory:

C:\DRIVER32.log

Machine: CL16
Parameter Set: Audit
Index: 925000000
Seed: 73660
Configured Users:

8910

Pipe Name: DRIVER32
Connect Rate: 50
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 10
CLIENT_NURAND:

233

CPU: 1
Additional Options:

Number of User groups: 32

Driver Engine:

DRIVER01

IIS Server: DL1
SQL Server:

tcp:192.168.1.1,1436

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1 - 966

1
29784

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

DRIVER02

IIS Server: DL1
SQL Server:

tcp:192.168.1.1,1436

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 967 -

1932

1

29784

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

DRIVER03

IIS Server: DL2
SQL Server:

tcp:192.168.1.1,1436

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1933 -

2898

1

29784

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

DRIVER04

IIS Server: DL2
SQL Server:

tcp:192.168.1.1,1436

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 2899 -

3864

1

29784

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

DRIVER05

IIS Server: DL3
SQL Server:

tcp:192.168.1.1,1437

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 3865 -

4755

1

29784

DRIVER06

tcp:192.168.1.1,1437

5646

1

29784

DRIVER07

tcp:192.168.1.1,1437

6537

1

29784

DRIVER08

tcp:192.168.1.1,1437

7428

1

29784

DRIVER09

tcp:192.168.1.1,1438

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 8910
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL3
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 4756 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 8910
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL4
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 5647 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 8910
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL4
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 6538 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 8910
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL5
SQL Server:

Database: tpcc
User: sa
Protocol: HTML

8328
1

29784

DRIVER10

tcp:192.168.1.1,1438

9228

1

29784

DRIVER11

tcp:192.168.1.1,1438

10128

1

29784

DRIVER12

tcp:192.168.1.1,1438

11028

1

29784

DRIVER13

tcp:192.168.1.1,1439

w_id Range: 7429 -
w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9000
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL5
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 8329 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9000
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL6
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 9229 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9000
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL6
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 10129 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9000
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL7
SQL Server:

Database: tpcc
User: sa
Protocol: HTML

11994
1

29784

DRIVER14

tcp:192.168.1.1,1439

12960

1

29784

DRIVER15

tcp:192.168.1.1,1439

13926

1

29784

DRIVER16

tcp:192.168.1.1,1439

14892

1

29784

DRIVER17

tcp:192.168.1.2,1440

w_id Range: 11029 -
w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL7
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 11995 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL8
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 12961 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL8
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 13927 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL9
SQL Server:

Database: tpcc
User: sa
Protocol: HTML

15792

1

29784

DRIVER18

tcp:192.168.1.2,1440

16692

1

29784

DRIVER19

tcp:192.168.1.2,1440

17592

1

29784

DRIVER20

tcp:192.168.1.2,1440

18492

1

29784

DRIVER21

tcp:192.168.1.2,1441

w_id Range: 14893 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9000
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL9
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 15793 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9000
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL10
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 16693 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9000
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL10
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 17593 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9000
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL11
SQL Server:

Database: tpcc
User: sa

19458

1

29784

DRIVER22

tcp:192.168.1.2,1441

20424

1

29784

DRIVER23

tcp:192.168.1.2,1441

21390

1

29784

DRIVER24

tcp:192.168.1.2,1441

22356

1

29784

DRIVER25

tcp:192.168.1.2,1442

w_id Range: 18493 -
Protocol: HTML

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL11
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 19459 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL12
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 20425 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL12
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 21391 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL13
SQL Server:

Database: tpcc
User: sa

23322

1

29784

DRIVER26

tcp:192.168.1.2,1442

24288

1

29784

DRIVER27

tcp:192.168.1.2,1442

25254

1

29784

DRIVER28

tcp:192.168.1.2,1442

26220

1

29784

DRIVER29

tcp:192.168.1.2,1443

w_id Range: 22357 -
Protocol: HTML

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL13
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 23323 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL14
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 24289 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL14
SQL Server:

Database: tpcc
User: sa
Protocol: HTML
w_id Range: 25255 -

w_id Min Warehouse:

w_id Max Warehouse:

Scale: Normal
User Count: 9660
District id: 1
Scale Down: No

Driver Engine:

IIS Server: DL15
SQL Server:

Database: tpcc
User: sa

Protocol: HTML
w_id Range: 26221 -
27111
w_id Min Warehouse:
1
w_id Max Warehouse:
29784
Scale: Normal
User Count: 8910
District id: 1
Scale Down: No

Driver Engine:
DRIVER30
IIS Server: DL15
SQL Server:
tcp:192.168.1.2,1443
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 27112 -
28002
w_id Min Warehouse:
1
w_id Max Warehouse:
29784
Scale: Normal
User Count: 8910
District id: 1
Scale Down: No

Driver Engine:
DRIVER31
IIS Server: DL16
SQL Server:
tcp:192.168.1.2,1443
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 28003 -
28893
w_id Min Warehouse:
1
w_id Max Warehouse:
29784
Scale: Normal
User Count: 8910
District id: 1
Scale Down: No

Driver Engine:
DRIVER32
IIS Server: DL16
SQL Server:
tcp:192.168.1.2,1443
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 28894 -
29784
w_id Min Warehouse:
1
w_id Max Warehouse:
29784
Scale: Normal
User Count: 8910
District id: 1
Scale Down: No

Number of Parameter Sets: 3

AuditShutdown

Think Time	Key Time	RT Delay	RT Fence	Menu Delay	Txn Weight
				New Order	
44.72		200.00		200.00	0.10
		5.00		0.10	
				Payment	43.07
		200.00		200.00	0.10
		5.00		0.10	
				Delivery	4.07
		200.00		200.00	0.10
		5.00		0.10	
				Stock Level	4.07
		200.00		200.00	0.10
		20.00		0.10	
				Order Status	4.07
		200.00		200.00	0.10
		5.00		0.10	

Audit

Think Time	Key Time	RT Delay	RT Fence	Menu Delay	Txn Weight
				New Order	
44.96		12.05		18.00	0.10
		5.00		0.10	
				Payment	43.01
		12.05		3.00	0.10
		5.00		0.10	
				Delivery	4.01
		5.05		3.00	0.10
		5.00		0.10	
				Stock Level	4.01
		5.05		3.00	0.10
		20.00		0.10	
				Order Status	4.01
		10.05		3.00	0.10
		5.00		0.10	

~Default

Think Time	Key Time	RT Delay	RT Fence	Menu Delay	Txn Weight
				New Order	
10.00		10.05		2.01	0.10
		5.00		0.10	
				Payment	10.00
		10.05		2.01	0.10
		5.00		0.10	
				Delivery	1.00
		10.05		2.01	0.10
		5.00		0.10	
				Stock Level	1.00
		10.05		2.01	0.10
		5.00		0.10	
				Order Status	1.00
		10.05		2.01	0.10
		5.00		0.10	

Appendix D 60 Day Space Requirements

TPC-C 60 Day Space Requirements						
Warehouses	31,001				TpmC	372,140
Table	Rows	Data KB	Index KB	Extra 5% KB	8hr Space	Total Space KB
Warehouse	31,001	3,312	200	176		3688
District	310,010	34,448	264	1,736		36448
Customer	930,030,000	676,385,456	42,201,928	35,929,369		754516753
History	930,030,000	54,308,328	203,040		10,034,023	54511368
NewOrder	279,009,000	4,971,208	12,648	249,193		5233049
Orders	930,030,000	30,368,328	14,813,640		12,929,916	45181968
OrderLine	9,300,269,406	609,853,736	1,436,496		201,780,560	611290232
Item	100,000	9,416	216	482		10114
Stock	3,100,100,000	992,032,008	2,091,968	49,706,199		1043830175
Total		2,367,966,240	60,760,400	85,887,154	224,744,499	2,514,613,794
	MB					
Dynamic Space	678,252	Sum of Data for Order, Orderline and History				
Static Space	1,777,425	Sum of Data+Index+5%-Dynamic Space				
Free Space	na	Total Allocated Spac - (Dynamic + Static Space)				
Daily Growth	130,269	(Dynamic Space/(W*62.5))*tpmc				
Daily Spread	-	(Free Space -1.5*Daily Growth) Zero Assumed				
60 Day Space MB	9,593,581					
60 Day Space GB	9,368.73	GB				
Log Size	150,000.00	MB				
KB Per New Order	6.53	KB				
8 hr log MB	1,139,563	MB				
8 hr log GB	1,112.8544	GB				
		Disks	Disks	Formatted Size	Space	
Space Usage	GB Needed	Measured	Size	Size	Available	
180 Day Space DB	9,368.73	578	36GB	33.919	19,605.07	
			9GB		0.00	
			4GB		0.00	
Total DB		578.00			**19605.07**	
8-hr log + mirror	2,225.7088	12	300GB	279.397	3,352.7640	
OS, Swap	3		9GB		0.00	
Total Storage	11,597.44	GB			22,957.83	

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

June 1, 2007

Hewlett-Packard Company
Eric Deehr
1 Microsoft Way
Redmond, WA 98052

Mr. Deehr:

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	16	$11,504
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. A list of Microsoft's resellers can be found at http://www.microsoft.com/products/info/render.aspx?view=22&type=mnp&content=22/licensing>/b>

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.

D-Link 16-Port Rackmountable KVM Switch with Cables

Part #: DKVM-16-B

Price : $ 599.00
Stock Status: In Stock
Shipping: **Free Shipping**

Quantity 1

Print It
Email it
Request-A-Quote
Ask-A-Question

Overview | Accessories | More Pictures | Whats included

Features:

- Control up to 16 computers from one keyboard, mouse and monitor
- Include 16 sets of our premium 6 foot 3-in-1 kvm cables
- Rackmountable - rack kit included
- It is easy to use, powerful, and scalable
- Each DKVM-16 port has a dedicated microprocessor to intelligently manage port traffic and allows simultaneous boot-ups for all attached PCs
- The advanced microprocessor technology also saves CAPSLOCK, NUMLOCK, and SCROLL LOCK status for each PC
- Two control buttons located on the front panel gives you one touch access to your attached PCs and the user-friendly on-screen display menu allows you to configure your DKVM-16 switchs settings
- The daisy chain port allows up to 8 DKVM-16 KVM switches to be stacked together for controlling as many as 128 computers
- Featuring hot-plug, auto-scan, keyboard hot keys and audible feedback, the DKVM-16 makes it simple to manage all of your server computers.
- The DKVM-16 supports VGA, SVGA, and MultiSync monitors at up to 1920 X 1440 resolution
- Integrated mouse conversion technology allows older AT type computers with serial mouse ports to be connected to the DKVM-16 using the included serial-to-PS/2 mouse converter
- Both AT and PS/2 type keyboards are also supported, and the most popular mice are supported, including Microsoft IntelliMouse and Microsoft IntelliMouse Explorer.

Technical Specifications	
Computer Control	16
Display Indicators	1 Bank LED 1 Port LED
Console Connectors	• **Keyboard:** 6-pin Mini-DIN Female PS/2 • **Mouse:** 6-pin Mini-DIN Female PS/2 • **Monitor:** 15-pin HDDB Female VGA, SVGA, XGA, MultiSync
Monitor Resolution Support	Up to 1920 x 1440
Switching Control	• Hot Keys • Push Buttons • On Screen Display
Switching Notification	Audio Beep
Scanning Interval	5-99 sec
Power	12V 1A AC Adapter
Dimensions	• Length 16 in (406 mm) • Width 9 in (229 mm) • Height 3.25 in (83 mm) • Weight 123oz (3.5kg)
Rack Mount	19" RackMountable. Kit Included
Cascade Port	1 Daisy Chain Port to Cascade Up to 8 Server Computers
Operating Temp	32ºF to 122ºF (0ºC to 50ºC)
Storage Temp	-4ºF to 140ºF (-20ºC to 60ºC)
Operating Humidity	0% to 80% Non-Condensing
Storage Humidity	0% to 80% Non-Condensing
Certifications	FCC, CE

Minimum Requirements	One VGA, SVGA, or Multisync Console Monitor One PS/2 Keyboard One PS/2 Mouse
Computers	• One VGA, SVGA, or MultiSync Video Card or Port • One PS/2(6-pin Mini-DIN) Mouse port • One PS/2((6-pin Mini-DIN) Keyboard port
Warranty	1 Year

Hewlett Packard Company	HP rx6600			TPCC Rev 5.8 February 2007 11-Jun-07		
Description	Price Key	Part Numbr	Unit Price	Qty	Extended Price	3 Yr Maint Price
HP Integrity rx6600 with (4) 1.6GHz/24MB Processor includes dual port 10/100/1000GbE adapter and 1 power supply	1	AD134A#180	$43,845	1	$43,845	
I/O backplane	1	AD296A	$0	1	$0	
core I/O: 8-port SAS Smart Array RAID Controller Card	1	AB036A #100	$500	1	$500	
HP Smart Array P600/256 BBWC Controller	1	337972-B21	$729	6	$4,374	
192GB - 16GB DDR2 memory quad (4x4GB)	1	AB566A	$18,977	12	$227,724	
48 DIMM Carrier Board	1	AD127A	$4,495	1	$4,495	
36GB, 10K SAS HDD	1	AD140A	$356	2	$712	
Racked form factor kit	1	AD053A	$150	1	$150	
3 Year Support (Hardware and Software)	1	HA110A3				$8,577
DVD-ROM	1	AD142A	$230	1	$230	
FC-HBA 4GB, FC2143	1	AD167A	$1,225	1	$1,225	
HP 36GB 3G SAS 15K SFF SP HDD	1	431933-B21	$369	576	$212,544	
HP 36GB 3G SAS 15K SFF SP HDD (10% Spares)	1	431933-B21	$369	58	$21,402	
HP StorageWorks 70 Modular Smart Array	1	418800-B21	$3,199	24	$76,776	
HP StorageWorks 70 Modular Smart Array (10% Spares)	1	418800-B21	$3,199	3	$9,597	
HP Rack 5642	1	358254-B21	$865	3	$2,595	
UPS - HP R1500 XR Low Voltage US	1	204404-001	$866	1	$866	
HP 16A High Voltage Modular PDU	1	252663-B24	$299	6	$1,794	
Modular Storage Array 1000	1	201723-B22	$6,499	1	$6,499	
MSA1000 Controller, with 256 MB cache	1	218231-B22	$4,290	1	$4,290	
300 GB Ultra320 10K Universal Hard Drive	1	350964-B22	$839	12	$10,068	
300 GB Ultra320 10K Universal Hard Drive (10% Spares)	1	350964-B22	$839	2	$1,678	
5M LC to LC Cable Kit	1	221692-B22	$82	1	$82	
TA5300 Enclosure for DAT tape	1	C7508B	$729	1	$729	
DAT Tape	1	C7497C	$899	1	$899	
	Server Subtotal				**$633,074**	**$8,577**
Windows Server 2003	1	T2373A	$3,602	1	$3,602	
	Server Software Subtotal				**$3,602**	**$0**
DL140 G2 X3.6/2MB NHP SCSI US Rck Svr	1	383503-001	$2,799	16	$44,784	
2nd 3.6GHz Xeon Processor for DL140	1	378283-B21	$1,079	16	$17,264	
3 Year Support (ProLiant Hardware)	1	HA110A3	$468	16		$7,488
HP Mouse	1	P5304M	$28	1	$28	
HP Enhanced Keyboard (USB/PS2)	1	DC852A#ABA	$25	1	$25	
HP ProCurve 2824 port switch	1	J4903A	$2,499	1	$2,499	
3 Year Support (ProCurve Hardware and Software)	1	HA110A3	$1,298	1		$1,298
S7540 17in CRT Monitor	1	PF997AA	$139	1	$139	
	Client Subtotal				**$64,739**	**$8,786**
	***Total Extended Price:**					**$718,778**
HP's Large Configuration Discount *	***Total Discount:**					**-$151,612**

Price Key: 1-HP, 2-Microsoft, 3-KVMS.com

3 year cost of ownership: **$567,166 USD**

tpmC: 372,140

* A 21.09% 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:

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

Sales contact Vendor 1: HP Sales Development, 19111 Pruneridge Ave., Cupertino, CA 95014 (408) 447 2320 Sales contact
Vendor 2: Jamie Reding (425) 703-0510 jamiere@microsoft.com Vendor 3= KVMs.com

For Pricing Verification and Ordering, Contact:

HP Sales Development, 19111 Pruneridge Ave., Cupertino, CA 95014 (408) 447 2320