NEC

TPC Benchmark™ C
Full Disclosure Report

NEC TX7/i9510 (32 SMP)

Using Microsoft .NET Server 2003, DataCenter Edition and Microsoft SQL Server 2000, Enterprise Edition (64-bit)

First Edition
Submitted for Review
September 9, 2002

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

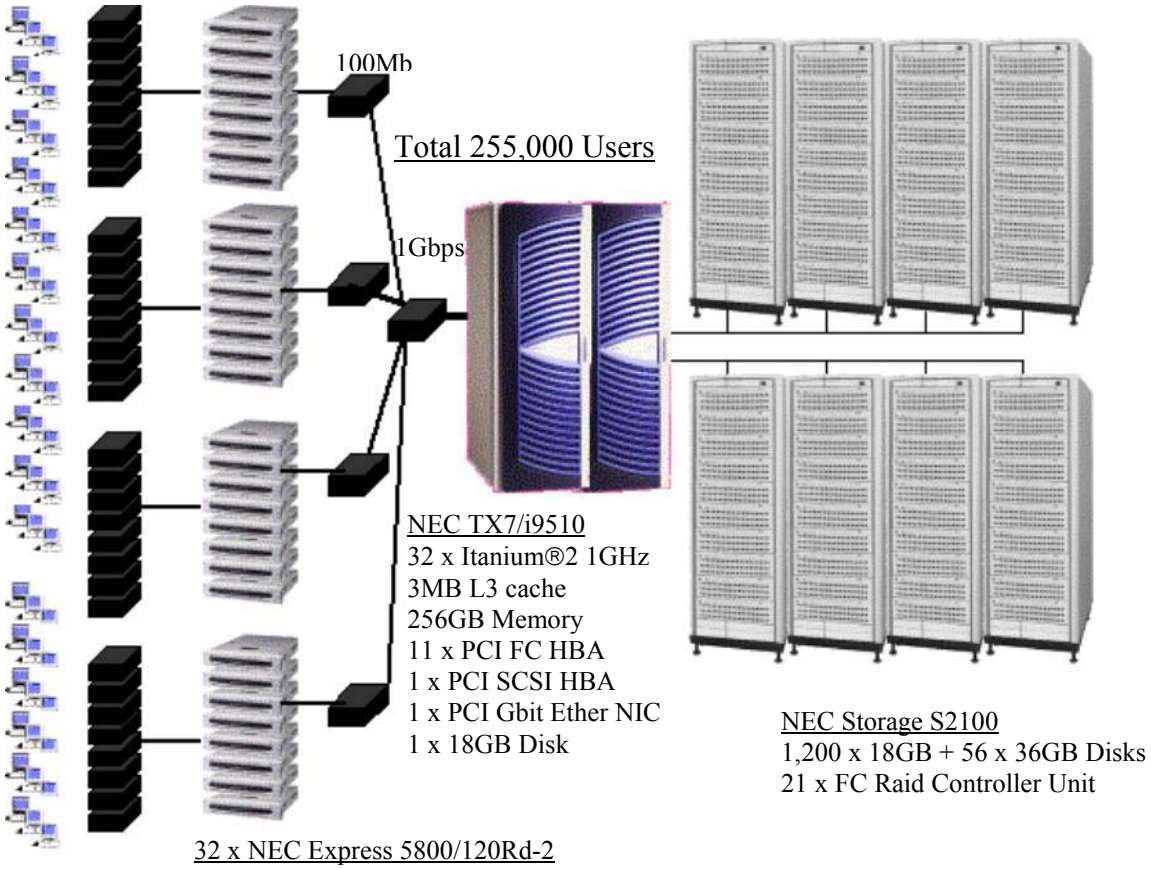
Benchmark results are highly dependent upon workload, specific application requirements, and system design and implementation. Relative system performance will vary as a result of these and other factors. Therefore, TPC Benchmark™ C should not be used as a substitute for a specific customer application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

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

Printed in USA, 2002

NEC	NEC TX7/i9510 C/S with Express5800/120Rd-2		TPC-C Rev. 5.0 Reported Date Sep 9 , 2002
Total System Cost	**TPC-C Throughput**	**Price/Performance**	**Availability Date**
$ 4,619,992	**308,620.82 tpmC**	**$14.96 per tpmC**	**Dec 31, 2002**

Processors	Database Manager	Operating System	Other Software	Number of Users
32 Intel Itanium®2 1GHz for Server 64 Intel Pentium®III 1.26GHz for Client	Microsoft SQL Server 2000 Enterprise Edition(64-bit)	Microsoft Windows .NET Server 2003 Datacenter Edition	Windows 2000 Server Microsoft VC++ Microsoft COM+	**255,000**



System Component	Server		Each Client	
Processors **Cache**	32	Itanium®2 1GHz 3MB L3 Cache	2	Pentium® III 1.26GHz 512KB L2 Cache
Memory		1 GB x 256		512MB x 2
Disk Controllers	11 1	QLA2200F Adaptec 39160	1	On-board SCSI
Disk Drives	1 1,200 56	18GB (16.6GB Usable) 18GB (16.6GB Usable) 36GB (33.2GB Usable)	1	18GB
Total Storage		23,634GB		18GB
Others	1 1	DVD-ROM Drive 1Gbps Ether NIC	1 1	CD-ROM Drive On-board Ether controller

NEC

NEC TX7/i9510

C/S with Express5800/120Rd-2

TPC-C REV 5.0

Report Date: 09/09/02

Description	Part Number	Third Party Brand	Pricing	Unit Price	Qty	Extended Price	3-yr Mnt. Price
Server Hardware							
TX7/i9510 system	050-02170-000	NEC	1	1,397,152	1	1,397,152	983,965
Itanium2 1GHz/3MB - 32 pack	Included	NEC	1	0	1	0	0
256GB (256 x 1GB) Memory	Included	NEC	1	0	1	0	0
18GB 10K rpm HDD	Included	NEC	1	0	1	0	0
Gbit Ether NIC	Included	NEC	1	0	1	0	0
DVD-ROM, KB/MS	Included	NEC	1	0	1	0	0
Windows .NET Datacenter Server	Included	Microsoft	2	0	1	0	0
NEC AccuSync50 (15" monitor)	AS50	NEC	3	140	1	140	0
FC HBA QLA2200 (+2 spares)	QLA2200F-CK	Qlogic	3	1,060	13	13,780	0
Fibre Optic Cable 10M SC-SC (+2 spares)	050-02059-000	NEC	1	200	3	600	0
					Subtotal	1,411,672	983,965
Disk Subsystem							
NEC Storage S2100 Basic Unit	050-02055-000	NEC	1	44,021	21	924,431	221,864
2 RAID_Cntrl, 512MB Cache, 1DE, 3 x 18GB Drive							
1GB(2 x 512MB) PC133 SDRAM memory,	062-02029-000	NEC	1	999	4	3,996	0
S2100 DE (including 2 FC DB9-DB9 cables) (+2 spares	050-02056-000	NEC	1	6,016	65	391,054	0
18GB 10K rpm FC HDD (+10% spares)	050-02057-000	NEC	1	450	1254	563,961	0
36GB 10K rpm FC HDD (+10% spares)	050-02058-000	NEC	1	815	62	50,538	0
42U Rackframe	050-01790-000	NEC	1	1,799	11	19,789	0
FC Cable 10M SC-SC (+2 spares)	050-02059-000	NEC	1	200	23	4,600	0
					Subtotal	1,958,370	221,864
Server Software							
SQL Server2000 Ent. Edition(64-bit) ,Processor Licens	810-00560	Microsoft	2	16,541	32	529,312	5,850
					Subtotal	529,312	5,850
Client Hardware							
NEC Express5800/120Rd-2							
Base System with 1 x Pentium III 1.26GHz/512KB	850156001	NEC	1	2,349	32	75,168	0
1 x Pentium III 1.26GHz/512KB BTO Option	062-02025-000	NEC	1	699	32	22,368	0
1GB(2 x 512MB) PC133 SDRAM memory,	062-02029-000	NEC	1	999	32	31,968	0
1 x 18.2GB 10K rpm Ultra160 HDD,	062-02011-000	NEC	1	339	32	10,848	0
CD-ROM, 2 x On-board LAN, KB/MS	Included	NEC	1	0	32	0	0
3 years of warranty service to 4-hour response, 7x24	EN-0000-1095-72	NEC	1	1,399	32	0	44,768
NEC AccuSync50 (15" monitor)	AS50	NEC	3	140	32	4,480	0
42U Rackframe	050-01790-000	NEC	1	1,799	2	3,598	0
Fast Ether Cable 25' RJ45-RJ45 (+2 spares)	C5E-114GY-25FH	AESP	3	11	34	374	0
					Subtotal	148,804	44,768
Client Software							
Windows2000 Server, Server License	C11-00821	Microsoft	2	738	32	23,616	(Included)
Visual C++ Professional 6.0 Win32	048-00317	Microsoft	2	549	1	549	(Included)
					Subtotal	24,165	
User Connectivity							
24-port Fast Ether Switch w/ 2 optional uplink (+2 spare	AT-8224XL-10	Allied Telesyn	3	749	3	2,247	0
1-port 1000BASE-SX expansion module (+2 spares)	AT-A15/SX	Allied Telesyn	3	378	6	2,268	0
					Subtotal	4,515	0
					TOTAL	4,076,838	1,256,447
NEC brand total(Pricing 1-NEC)						3,504,692	1,250,597
NEC brand Large Purchase Cash Prepay Discount(-15%)						(525,704)	(187,590)

Notes:

Client software maintenance is covered by the maintenance costs of Microsoft SQL Server

Pricing: 1-NEC 2-Microsoft 3-CDW

: with 3-year warranty

Results and methodology audited by Francois Raab of InfoSizing, Inc. (www.sizing.com)

3-Yr. Cost of Ownership: **$4,619,992**

tpmC Rating: **308620.82**

$ / tpmC: 14.96

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

Numerical Quantities Summary

MQTh, Computed Maximum Qualified Throughput			308,620.82 tpmC
Response Times(in seconds)	**90%**	**Average**	**Maximum**
New-Order	2.59	1.11	177.99
Payment	2.47	1.01	172.56
Stock-Level	2.80	1.22	176.19
Delivery(interactive portion)	0.11	0.14	93.52
Delivery(deferred portion)	0.27	0.37	169.42
Order-status	2.59	1.05	166.44
Menu	0.11	0.15	139.74
Response time delay added for emulated components			0.1
Transaction Mix , in percent of total transaction			
New-Order			44.87%
Payment			43.04%
Order-Status			4.03%
Delivery			4.04%
Stock-Level			4.02%

Keying/Think Times (in seconds)	**Min.**		**Average**		**Max**	
New-Order	18.00	0.00	18.02	12.07	18.09	120.72
Payment	3.00	0.00	3.02	12.08	3.09	120.72
Order-Status	2.00	0.00	2.02	10.09	2.07	100.71
Delivery	2.00	0.00	2.02	5.08	2.06	50.72
Stock-Level	2.00	0.00	2.02	5.06	2.05	50.71

Test Duration	
Ramp-up time	104 minutes
Measurement interval	120 minutes
Number of checkpoints	4
Checkpoint interval	30 minutes
Number of transactions (all types) completed in measurement interval	85,917,350

Abstract

This report documents the compliance of NEC Corporation's TPC Benchmark™ C tests on the NEC TX7/i9510 client/server system with version 5.0 of the TPC Benchmark C Standard Specification. 32 Clients (NEC Express 5800/120Rd-2) were used as the front-end clients.

The operating system and the DBMS used on the server were Microsoft Windows .NET Server 2003 DataCenter Edition and Microsoft SQL Server 2000 Exterprise Edition(64-bit). The operating system on the clients was Microsoft Windows 2000 Server SP3. Those clients ran Microsoft's IIS server 5.0 and COM+.

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

TPC Benchmark™ C Metrics

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

System	SW	Total System Cost	TpmC	$ per tpmC	Availability Date
NEC TX7/i9510	MS Windows .NET Server 2003 DataCenter Edition MS SQL Server 2000, Enterprise Edition(64-bit)	$4,616,992	308,620.82	$14.96	Dec 31, 2002

Standard and Executive Summary Statements

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

Auditor

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

Preface

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

TPC Benchmark™ C Overview

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

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

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

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

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

Document Structure

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

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

TPC Benchmark™ C Full Disclosure

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

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

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

General Items

Order and titles

The order and titles of sections in the Test Sponsor's Full Disclosure report must correspond with the order and titles of sections from the TPC-C standard specification (i.e., this document). The intent is to make it as easy as possible for readers to compare and contrast material in different Full Disclosure reports.

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

Summary Statement

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

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

Numerical Quantities Summary

The numerical quantities listed below must be summarized near the beginning of the Full Disclosure report :

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

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

Application Program

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

Appendix A contains the application source codes used in the TPC-C benchmark.

Sponsor

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

This benchmark test was sponsored by NEC Corporation . NEC has authorized NEC Corp. to publish TPC-C performance and price/performance results for the NEC TX7/i9510. Price quotations contained in Appendix E correspond to the NEC TX7/i9510 server.

Parameters and Options

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

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

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

Configuration Diagrams

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

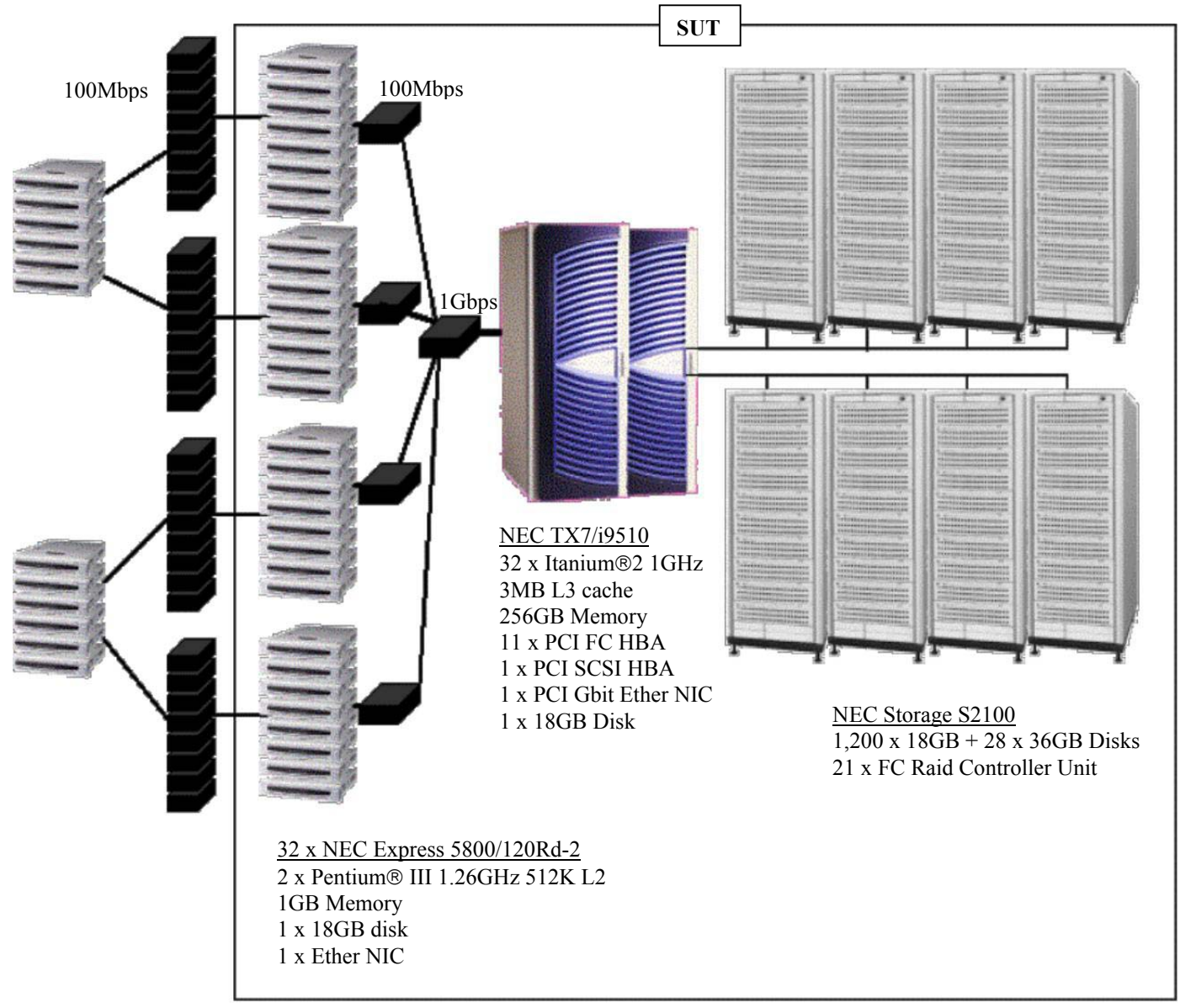
- *Number and type of processors*
- *Size of allocated memory, and any specific mapping/partitioning of memory unique to the test.*
- *Number and type of disk units (and controllers, if applicable).*
- *Number of channels or bus connections to disk units, including their protocol type.*
- *Number of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

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

Measured Configuration

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

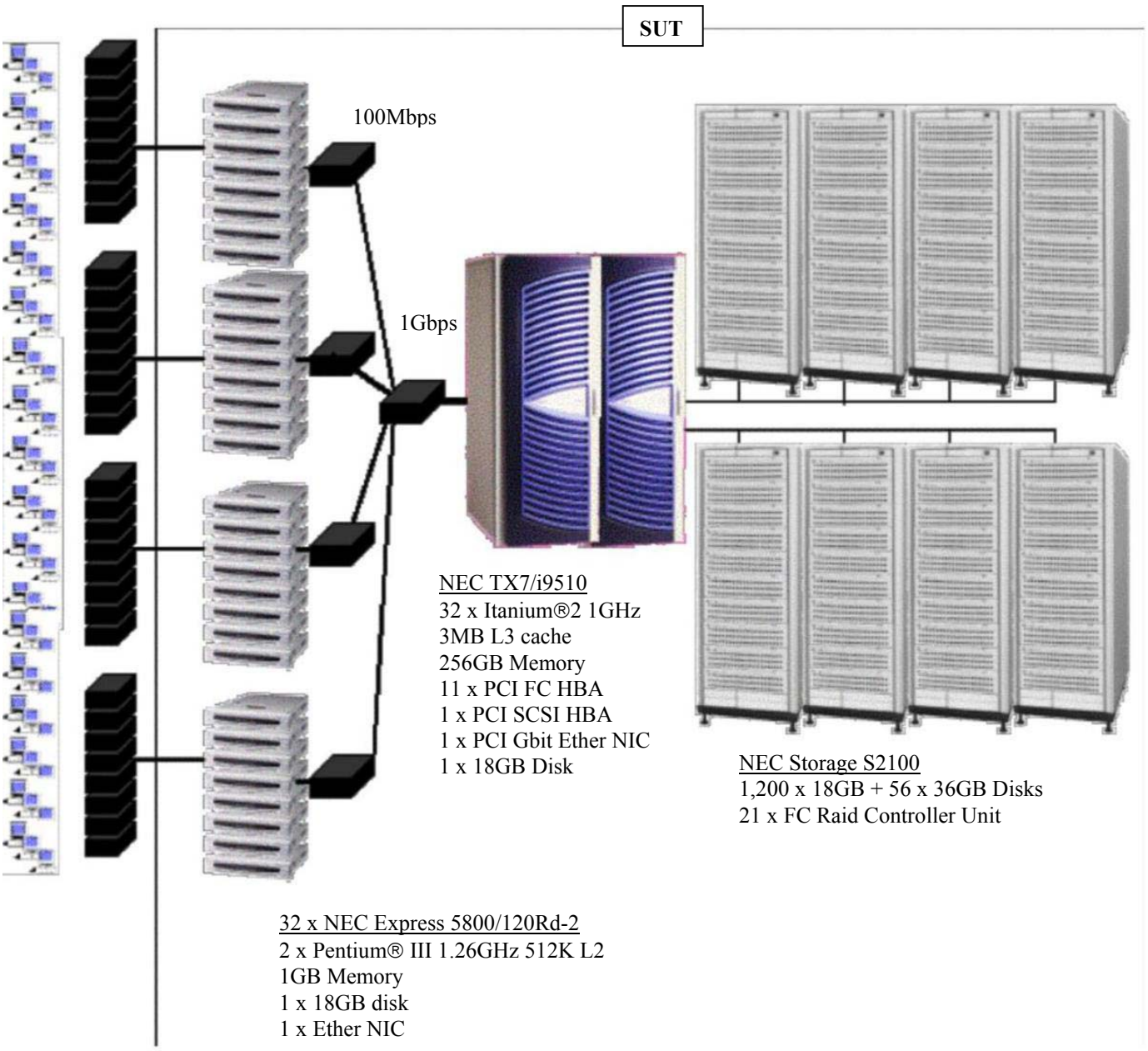
Figure 1.1 TX7/i9510, Measured Configuration Diagram



Priced System Configuration

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

Figure1.2: TX7/i9510, Priced Configuration Diagram



Clause 1 : Logical Database Design and Related Items

Table Definitions

Listings must be provided for all table definition statements and all other statements used to set-up the database.

Appendix B contains the code used to define and load the database tables..

Table Organization

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

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

Insert and Delete Operations

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

All insert and delete functions were fully operational during the entire benchmark.

Disclosure of Partitioning

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

Partitioning was not used on any table in this benchmark.

Replication of Tables

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

No tables were replicated in this benchmark test.

Additional and/or Duplicated Attributes in any Table

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

No duplications or additional attributes were used in this benchmark.

Clause 2 : Transaction and Terminal profiles Related Items

Random Number Generation

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

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

Terminal Input/Output Screen Layout

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

All screen layouts followed the specifications exactly.

Terminal feature Verification

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

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

Presentation Manager or Intelligent Terminal

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

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

Transaction Profiles

- *The percentage of home and remote order-lines in the New-Order transactions must be disclosed.*
- *The percentage of New-Order transactions that were rolled back as a result of an unused item number must be disclosed.*
- *The number of items per orders entered by New-Order transactions must be disclosed.*
- *The percentage of home and remote Payment transactions must be disclosed.*
- *The percentage of Payment and Order-Status transactions that used non-primary key (C_LAST) access to the database must be disclosed.*
- *The percentage of Delivery transactions that were skipped as a result of an insufficient number of rows in the NEW-ORDER table must be disclosed.*

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

Transaction Mix

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

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

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

Table 1 Transaction Statistics

	Statistic	Value
New Order	Home warehouse order lines	**99.00%**
	Remote warehouse order lines	**1.00%**
	Rolled back transactions	**1.00%**
	Average items per order	**10.00**
Payment	Home warehouse payments	**85.01%**
	Remote warehouse payments	**14.99%**
	Accessed by last name	**60.00%**
Order Status	Accessed by last name	**60.18%**
Delivery	Skipped deliveries	**0**
Transaction Mix	New Order	**44.87%**
	Payment	**43.04%**
	Stock Level	**4.02%**
	Delivery	**4.04%**
	Order Status	**4.03%**

Queuing Mechanism

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

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

The source code is listed in Appendix A.

Clause 3 : Transaction and System Properties Related Items

Transaction System Properties (ACID)

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

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

Atomicity Tests

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

Completed Transactions

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

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

Aborted Transactions

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

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

Consistency Tests

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

Consistency conditions one through four were tested using a script to issue queries to the database. The results of the queries verified that the database was consistent for all four tests. A run was executed over 50 minutes under 127500 users (12750 active warehouse) condition . A checkpoint generated in the test. The shell script of consistency was executed before and after the run. The result of the same queries verified that the database remained consistent after the run.

Isolation Tests

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

Isolation tests one through nine were executed using shell scripts to issue queries to the database. Each script included timestamps to demonstrate the concurrency of operations. The results of the queries were captured to files. The captured files were verified to demonstrate the required isolation had been met.
Case A was followed for Isolation Test 7, 8 and 9.

Durability Tests

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

- *Permanent irrecoverable failure of any single durable medium containing database, ABTH files/tables, or recovery log data.*
- *Instantaneous interruption(system crash/system hang) in processing which requires system reboot to recover.*
- *Failure of all or part of memory(loss of contents)*

Loss of Memory and Log

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

The following steps were performed on a database of 25,500 warehouses under the full load of users.

1. A sum of D_NEXT_O_ID of all rows in the district table was taken.
2. 255,000 users were logged in to the database and start transactions.
3. Waited for all emulated users to be activated and the number of TpmC exceed 90% of reported TpmC.
4. Removed one of mirrored log disk. The running continued without any interruptions.
5. Keep running more 5 minutes.
6. The system was powered off.
7. The RTE was shutted down.
8. The system was powered up. SQL Server was restarted and automatically recovered.
9. A new count of D_NEXT_O_ID was taken.
10. This number was compared with the number of new orders reported by the RTE.

Loss of Data

Loss of data was demonstrated on a 2,600 Warehouse database. The standard driving mechanism was used to generate the transaction load of 26,000 users for the test. To demonstrate recovery from a permanent failure of durable media containing TPC-C tables, the following steps were performed. The loss of log was combined into the test

1. A 2,600 Warehouse database was built having similar characteristics to the large database.
2. The database was backed up using SQL Server backup facilities.
3. A sum of D_NEXT_O_ID was taken.
4. 26,000 users were logged in to the database and kept running transactions about 5 minutes in steady state.
5. One disk drive for data part in the array was removed causing SQL Server error. Shut down SQL Server.
6. SQL Server was restarted and a dump of the transaction log was taken.
7. The 2,600 Warehouse database was restored from backup.
8. The transaction log was restored and transactions rolled forward.
9. A new count of D_NEXT_O_ID was taken.
10. This number was compared with the number of new orders reported by the RTE.

Loss of mirrored write-back cache

The Fibre Array system used for this benchmark has integrated feature of mirrored write-back cache. When a LUN is configured to enable write-back caching, the data on the cache is automatically mirrored on the RAMs in two controller modules, which are powered and protected from loss of power by the controller BBU. Loss of write-back cache was demonstrated on 2,600 warehouse database, by pulling off one of the controller module. A fully scaled database would also pass this test.

1. A sum of D_NEXT_O_ID of all rows in the district table was taken.
2. 26,000 users were logged in to the database and kept running transactions about 5 minutes in steady state.
3. A controller module, which manages write-back cache of mirrored drives, was pulled off.
4. Fibre system reported system error resulted in IO error for SQL database.
5. Contents on mirrored cache on another controller was automatically saved to temporal disk area and the Fibre Array house was eventually stopped. System was shut down.
6. The Fibre array was re-powered.
7. Saved data was automatically restored to mirrored cache and flushed to drives.
8. SQL Server was started up and database was recovered automatically.

9. A new count of D_NEXT_O_ID was taken.
10. This number was compared with the number of new orders reported by the RTE.

Clause 4 : Scaling and Database Population Related Items

Initial Cardinality of Tables

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

The TPC-C database was originally built with 25,500 warehouses.

Table 2 Number of Rows for Server

Table	Cardinality as benchmarked
Warehouse	25,500
Distinct	255,000
Customer	765,000,000
History	765,000,000
Orders	765,000,000
New Order	229,500,000
Order Line	7,649,976,018
Stock	2,550,000,000
Item	100,000
Deleted Warehouse Rows	0

Constant Value for the NURand function

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

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

Distribution of Tables and Logs

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

Table 3 depicts the distribution of the database over the disks of the tested and priced system.
Figure 1.1, 1.2 shows the disk configuration for measured and priced system.

Table 3 : Data Distribution

HBA#	iStorage S2100#	SP#	DEU#	# of Disks	RAID Level	Capacity (GB)	Partition1	Partition2	Partition3	Partition4
Partitions for DB Log							Logfiles (raw)	Junction point (NTFS)		
0	0	0	0	14	1/0	233.01	z:\dev\log (200GB)	z: (33.01GB)		
			1	14	1/0	233.01	z:\dev\log2 (200GB)	unused (33.01GB)		
			2	14	1/0	233.01	Not included in tested configuration			
			3	14	1/0	233.01				

Partitions for DB Data							misc fg (raw)	cs fg (raw)	freespace	backup file (NTFS)
1	1	0	0	15	0	249.45	z:\dev\m001 (15GB)	z:\dev\c001 (30GB)	(30GB)	z:\dev\b001 (174.45GB)
			1	15	0	249.45	z:\dev\m002 (15GB)	z:\dev\c002 (30GB)	(30GB)	z:\dev\b002 (174.45GB)
			2	15	0	249.45	z:\dev\m003 (15GB)	z:\dev\c003 (30GB)	(30GB)	z:\dev\b003 (174.45GB)
			3	15	0	249.45	z:\dev\m004 (15GB)	z:\dev\c004 (30GB)	(30GB)	z:\dev\b004 (174.45GB)
	2	0	0	15	0	249.45	z:\dev\m005 (15GB)	z:\dev\c005 (30GB)	(30GB)	z:\dev\b005 (174.45GB)
			1	15	0	249.45	z:\dev\m006 (15GB)	z:\dev\c006 (30GB)	(30GB)	z:\dev\b006 (174.45GB)
			2	15	0	249.45	z:\dev\m007 (15GB)	z:\dev\c007 (30GB)	(30GB)	z:\dev\b007 (174.45GB)
			3	15	0	249.45	z:\dev\m008 (15GB)	z:\dev\c008 (30GB)	(30GB)	z:\dev\b008 (174.45GB)
2	3	0	0	15	0	249.45	z:\dev\m009 (15GB)	z:\dev\c009 (30GB)	(30GB)	z:\dev\b009 (174.45GB)
			1	15	0	249.45	z:\dev\m010 (15GB)	z:\dev\c010 (30GB)	(30GB)	z:\dev\b010 (174.45GB)
			2	15	0	249.45	z:\dev\m011 (15GB)	z:\dev\c011 (30GB)	(30GB)	z:\dev\b011 (174.45GB)
			3	15	0	249.45	z:\dev\m012 (15GB)	z:\dev\c012 (30GB)	(30GB)	z:\dev\b012 (174.45GB)
	4	0	0	15	0	249.45	z:\dev\m013 (15GB)	z:\dev\c013 (30GB)	(30GB)	z:\dev\b013 (174.45GB)
			1	15	0	249.45	z:\dev\m014 (15GB)	z:\dev\c014 (30GB)	(30GB)	z:\dev\b014 (174.45GB)
			2	15	0	249.45	z:\dev\m015 (15GB)	z:\dev\c015 (30GB)	(30GB)	z:\dev\b015 (174.45GB)
			3	15	0	249.45	z:\dev\m016 (15GB)	z:\dev\c016 (30GB)	(30GB)	z:\dev\b016 (174.45GB)
3	5	0	0	15	0	249.45	z:\dev\m017 (15GB)	z:\dev\c017 (30GB)	(30GB)	z:\dev\b017 (174.45GB)
			1	15	0	249.45	z:\dev\m018 (15GB)	z:\dev\c018 (30GB)	(30GB)	z:\dev\b018 (174.45GB)
			2	15	0	249.45	z:\dev\m019 (15GB)	z:\dev\c019 (30GB)	(30GB)	z:\dev\b019 (174.45GB)
			3	15	0	249.45	z:\dev\m020 (15GB)	z:\dev\c020 (30GB)	(30GB)	z:\dev\b020 (174.45GB)
	6	0	0	15	0	249.45	z:\dev\m021 (15GB)	z:\dev\c021 (30GB)	(30GB)	z:\dev\b021 (174.45GB)
			1	15	0	249.45	z:\dev\m022 (15GB)	z:\dev\c022 (30GB)	(30GB)	z:\dev\b022 (174.45GB)
			2	15	0	249.45	z:\dev\m023 (15GB)	z:\dev\c023 (30GB)	(30GB)	z:\dev\b023 (174.45GB)
			3	15	0	249.45	z:\dev\m024 (15GB)	z:\dev\c024 (30GB)	(30GB)	z:\dev\b024 (174.45GB)
4	7	0	0	15	0	249.45	z:\dev\m025 (15GB)	z:\dev\c025 (30GB)	(30GB)	z:\dev\b025 (174.45GB)
			1	15	0	249.45	z:\dev\m026 (15GB)	z:\dev\c026 (30GB)	(30GB)	z:\dev\b026 (174.45GB)
			2	15	0	249.45	z:\dev\m027 (15GB)	z:\dev\c027 (30GB)	(30GB)	z:\dev\b027 (174.45GB)
			3	15	0	249.45	z:\dev\m028 (15GB)	z:\dev\c028 (30GB)	(30GB)	z:\dev\b028 (174.45GB)
	8	0	0	15	0	249.45	z:\dev\m029 (15GB)	z:\dev\c029 (30GB)	(30GB)	z:\dev\b029 (174.45GB)
			1	15	0	249.45	z:\dev\m030 (15GB)	z:\dev\c030 (30GB)	(30GB)	z:\dev\b030 (174.45GB)
			2	15	0	249.45	z:\dev\m031 (15GB)	z:\dev\c031 (30GB)	(30GB)	z:\dev\b031 (174.45GB)
			3	15	0	249.45	z:\dev\m032 (15GB)	z:\dev\c032 (30GB)	(30GB)	z:\dev\b032 (174.45GB)
5	9	0	0	15	0	249.45	z:\dev\m033 (15GB)	z:\dev\c033 (30GB)	(30GB)	z:\dev\b033 (174.45GB)
			1	15	0	249.45	z:\dev\m034 (15GB)	z:\dev\c034 (30GB)	(30GB)	z:\dev\b034 (174.45GB)
			2	15	0	249.45	z:\dev\m035 (15GB)	z:\dev\c035 (30GB)	(30GB)	z:\dev\b035 (174.45GB)
			3	15	0	249.45	z:\dev\m036 (15GB)	z:\dev\c036 (30GB)	(30GB)	z:\dev\b036 (174.45GB)
	10	0	0	15	0	249.45	z:\dev\m037 (15GB)	z:\dev\c037 (30GB)	(30GB)	z:\dev\b037 (174.45GB)
			1	15	0	249.45	z:\dev\m038 (15GB)	z:\dev\c038 (30GB)	(30GB)	z:\dev\b038 (174.45GB)
			2	15	0	249.45	z:\dev\m039 (15GB)	z:\dev\c039 (30GB)	(30GB)	z:\dev\b039 (174.45GB)
			3	15	0	249.45	z:\dev\m040 (15GB)	z:\dev\c040 (30GB)	(30GB)	z:\dev\b040 (174.45GB)
6	11	0	0	15	0	249.45	z:\dev\m041 (15GB)	z:\dev\c041 (30GB)	(30GB)	z:\dev\b041 (174.45GB)
			1	15	0	249.45	z:\dev\m042 (15GB)	z:\dev\c042 (30GB)	(30GB)	z:\dev\b042 (174.45GB)
			2	15	0	249.45	z:\dev\m043 (15GB)	z:\dev\c043 (30GB)	(30GB)	z:\dev\b043 (174.45GB)
			3	15	0	249.45	z:\dev\m044 (15GB)	z:\dev\c044 (30GB)	(30GB)	z:\dev\b044 (174.45GB)
	12	0	0	15	0	249.45	z:\dev\m045 (15GB)	z:\dev\c045 (30GB)	(30GB)	z:\dev\b045 (174.45GB)
			1	15	0	249.45	z:\dev\m046 (15GB)	z:\dev\c046 (30GB)	(30GB)	z:\dev\b046 (174.45GB)
			2	15	0	249.45	z:\dev\m047 (15GB)	z:\dev\c047 (30GB)	(30GB)	z:\dev\b047 (174.45GB)
			3	15	0	249.45	z:\dev\m048 (15GB)	z:\dev\c048 (30GB)	(30GB)	z:\dev\b048 (174.45GB)
7	13	0	0	15	0	249.45	z:\dev\m049 (15GB)	z:\dev\c049 (30GB)	(30GB)	z:\dev\b049 (174.45GB)
			1	15	0	249.45	z:\dev\m050 (15GB)	z:\dev\c050 (30GB)	(30GB)	z:\dev\b050 (174.45GB)
			2	15	0	249.45	z:\dev\m051 (15GB)	z:\dev\c051 (30GB)	(30GB)	z:\dev\b051 (174.45GB)
			3	15	0	249.45	z:\dev\m052 (15GB)	z:\dev\c052 (30GB)	(30GB)	z:\dev\b052 (174.45GB)
	14	0	0	15	0	249.45	z:\dev\m053 (15GB)	z:\dev\c053 (30GB)	(30GB)	z:\dev\b053 (174.45GB)
			1	15	0	249.45	z:\dev\m054 (15GB)	z:\dev\c054 (30GB)	(30GB)	z:\dev\b054 (174.45GB)
			2	15	0	249.45	z:\dev\m055 (15GB)	z:\dev\c055 (30GB)	(30GB)	z:\dev\b055 (174.45GB)
			3	15	0	249.45	z:\dev\m056 (15GB)	z:\dev\c056 (30GB)	(30GB)	z:\dev\b056 (174.45GB)

8	15	0	0	15	0	249.45	z:\dev\m057 (15GB)	z:\dev\c057 (30GB)	(30GB)	z:\dev\b057 (174.45GB)
			1	15	0	249.45	z:\dev\m058 (15GB)	z:\dev\c058 (30GB)	(30GB)	z:\dev\b058 (174.45GB)
			2	15	0	249.45	z:\dev\m059 (15GB)	z:\dev\c059 (30GB)	(30GB)	z:\dev\b059 (174.45GB)
			3	15	0	249.45	z:\dev\m060 (15GB)	z:\dev\c060 (30GB)	(30GB)	z:\dev\b060 (174.45GB)
	16	0	0	15	0	249.45	z:\dev\m061 (15GB)	z:\dev\c061 (30GB)	(30GB)	z:\dev\b061 (174.45GB)
			1	15	0	249.45	z:\dev\m062 (15GB)	z:\dev\c062 (30GB)	(30GB)	z:\dev\b062 (174.45GB)
			2	15	0	249.45	z:\dev\m063 (15GB)	z:\dev\c063 (30GB)	(30GB)	z:\dev\b063 (174.45GB)
			3	15	0	249.45	z:\dev\m064 (15GB)	z:\dev\c064 (30GB)	(30GB)	z:\dev\b064 (174.45GB)
9	17	0	0	15	0	249.45	z:\dev\m065 (15GB)	z:\dev\c065 (30GB)	(30GB)	z:\dev\b065 (174.45GB)
			1	15	0	249.45	z:\dev\m066 (15GB)	z:\dev\c066 (30GB)	(30GB)	z:\dev\b066 (174.45GB)
			2	15	0	249.45	z:\dev\m067 (15GB)	z:\dev\c067 (30GB)	(30GB)	z:\dev\b067 (174.45GB)
			3	15	0	249.45	z:\dev\m068 (15GB)	z:\dev\c068 (30GB)	(30GB)	z:\dev\b068 (174.45GB)
	18	0	0	15	0	249.45	z:\dev\m069 (15GB)	z:\dev\c069 (30GB)	(30GB)	z:\dev\b069 (174.45GB)
			1	15	0	249.45	z:\dev\m070 (15GB)	z:\dev\c070 (30GB)	(30GB)	z:\dev\b070 (174.45GB)
			2	15	0	249.45	z:\dev\m071 (15GB)	z:\dev\c071 (30GB)	(30GB)	z:\dev\b071 (174.45GB)
			3	15	0	249.45	z:\dev\m072 (15GB)	z:\dev\c072 (30GB)	(30GB)	z:\dev\b072 (174.45GB)
10	19	0	0	15	0	249.45	z:\dev\m073 (15GB)	z:\dev\c073 (30GB)	(30GB)	z:\dev\b073 (174.45GB)
			1	15	0	249.45	z:\dev\m074 (15GB)	z:\dev\c074 (30GB)	(30GB)	z:\dev\b074 (174.45GB)
			2	15	0	249.45	z:\dev\m075 (15GB)	z:\dev\c075 (30GB)	(30GB)	z:\dev\b075 (174.45GB)
			3	15	0	249.45	z:\dev\m076 (15GB)	z:\dev\c076 (30GB)	(30GB)	z:\dev\b076 (174.45GB)
	20	0	0	15	0	249.45	z:\dev\m077 (15GB)	z:\dev\c077 (30GB)	(30GB)	z:\dev\b077 (174.45GB)
			1	15	0	249.45	z:\dev\m078 (15GB)	z:\dev\c078 (30GB)	(30GB)	z:\dev\b078 (174.45GB)
			2	15	0	249.45	z:\dev\m079 (15GB)	z:\dev\c079 (30GB)	(30GB)	z:\dev\b079 (174.45GB)
			3	15	0	249.45	z:\dev\m080 (15GB)	z:\dev\c080 (30GB)	(30GB)	z:\dev\b080 (174.45GB)

Type of Database

A statement must be provided that describes:

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

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

Database Mapping

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

No partitioning or replication was used.

60-Days Space

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

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

1. The free space on the log file was queried using *DBCC sqlperf(logspace).*
2. 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 spaceused per NEW-ORDER transaction.
7. The space used per transaction was multiplied by the measured tpmC rate times 480 minutes.

The results of the above steps yielded a requirement of 686.78 GB of logspace (i.e., 1,373.56 GB of mirrored transaction log volume) to be available to sustain 8 hours. Total space of priced disks for the transaction log volume was 1,864.07 GB. It indicates that enough storage was configured to sustain 8 hours of growth.

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

Clause 5 : Performance Metrics and Response Time Related Items

Throughput

Measured tpmC must be reported

Table 4 : Measured tpmC

308,620.82 tpmC

Response Times

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

Table 5 : Response Times (in seconds)

Type	Average	Maximum	90th %
New-Order	1.11	177.99	2.59
Payment	1.01	172.56	2.47
Stock Level	1.22	176.19	2.80
Interactive Delivery	0.14	93.52	0.11
Deferred Delivery	0.37	169.42	0.27
Order Status	1.05	166.44	2.59
Menu	0.15	139.74	0.11

Keying and Think Times

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

Table 6 : Keying Times

Type	Minimum	Average	Maximum
New-Order	18.00	18.02	18.09
Payment	3.00	3.02	3.09
Stock Level	2.00	2.02	2.05
Interactive Delivery	2.00	2.02	2.06
Order Status	2.00	2.02	2.07

Table 7 : Think Times

Type	Minimum	Average	Maximum
New-Order	0.00	12.07	120.72
Payment	0.00	12.08	120.72
Stock Level	0.00	5.06	50.71
Interactive Delivery	0.00	5.08	50.72
Order Status	0.00	10.09	100.71

Response Time Frequency Distribution Curves

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

Figure 2.1 : New-Order Response Time Distribution

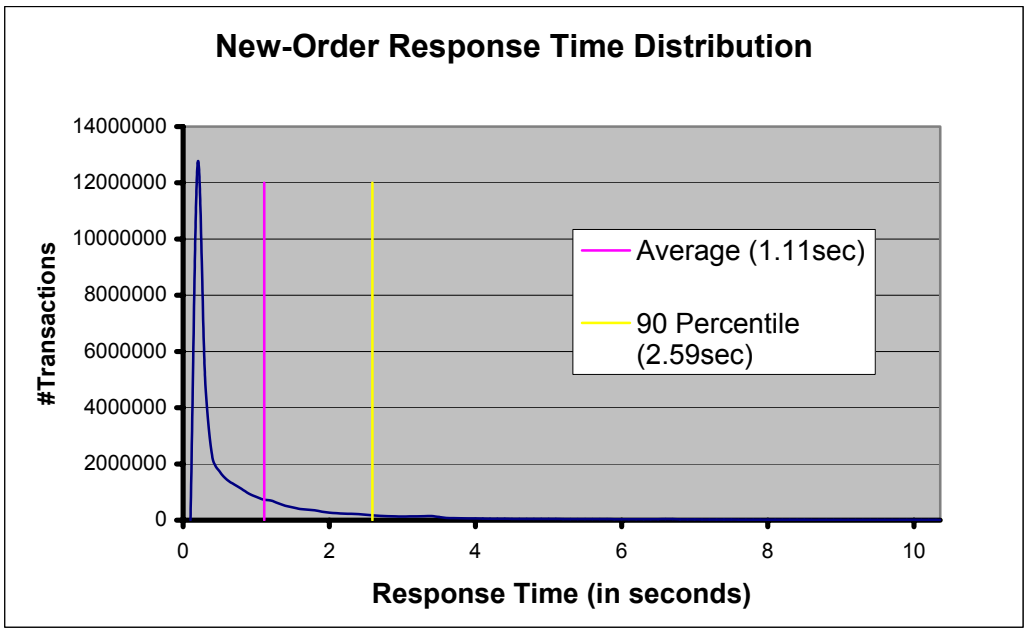


Figure 2.2 : Payment Response Time Distribution

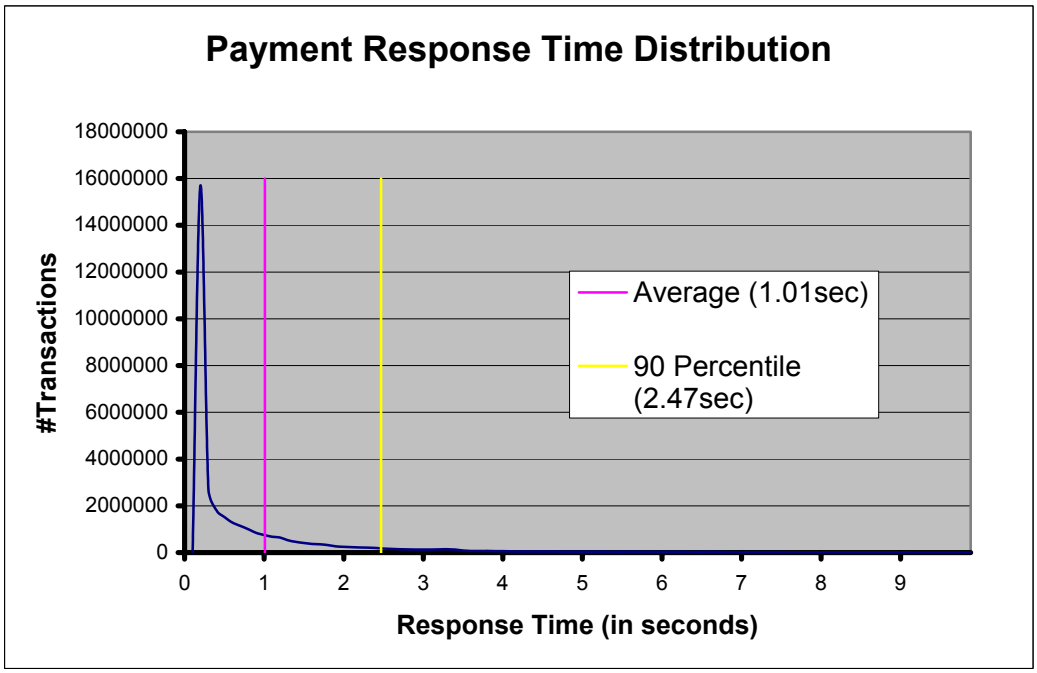


Figure 2.3 : Order-Status Response Time Distribution

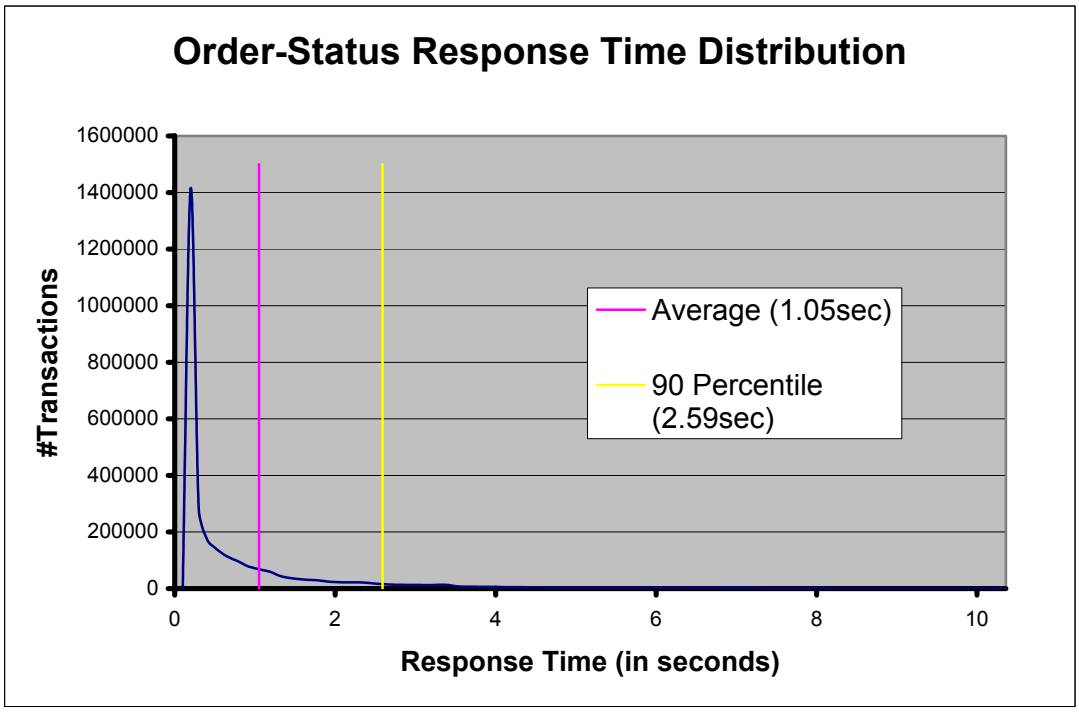


Figure 2.4 : Delivery Response Time Distribution

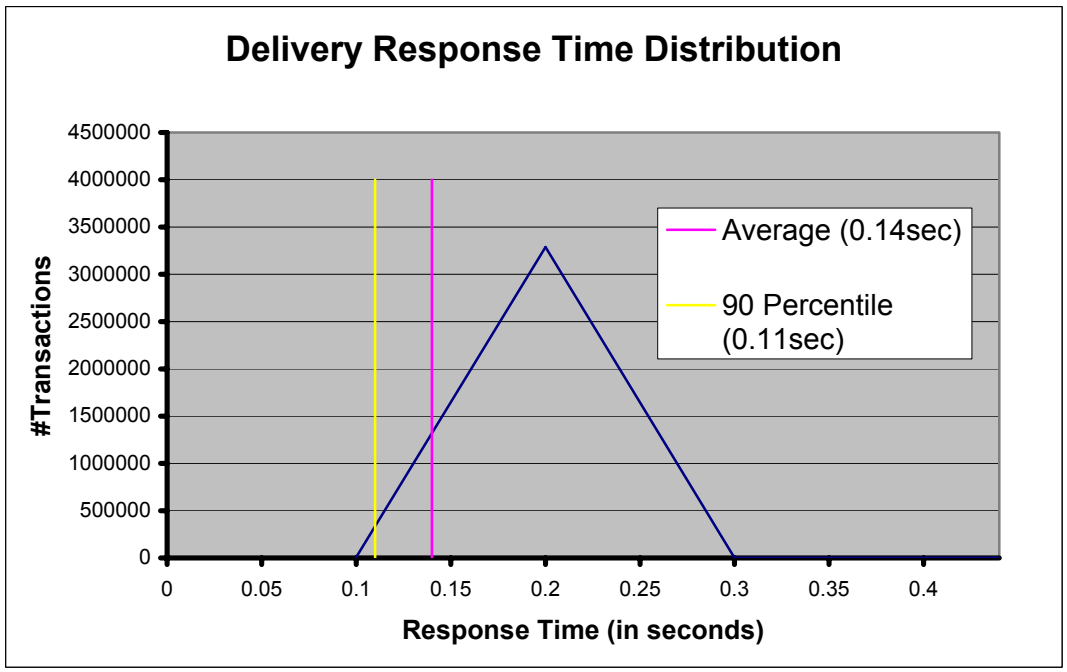
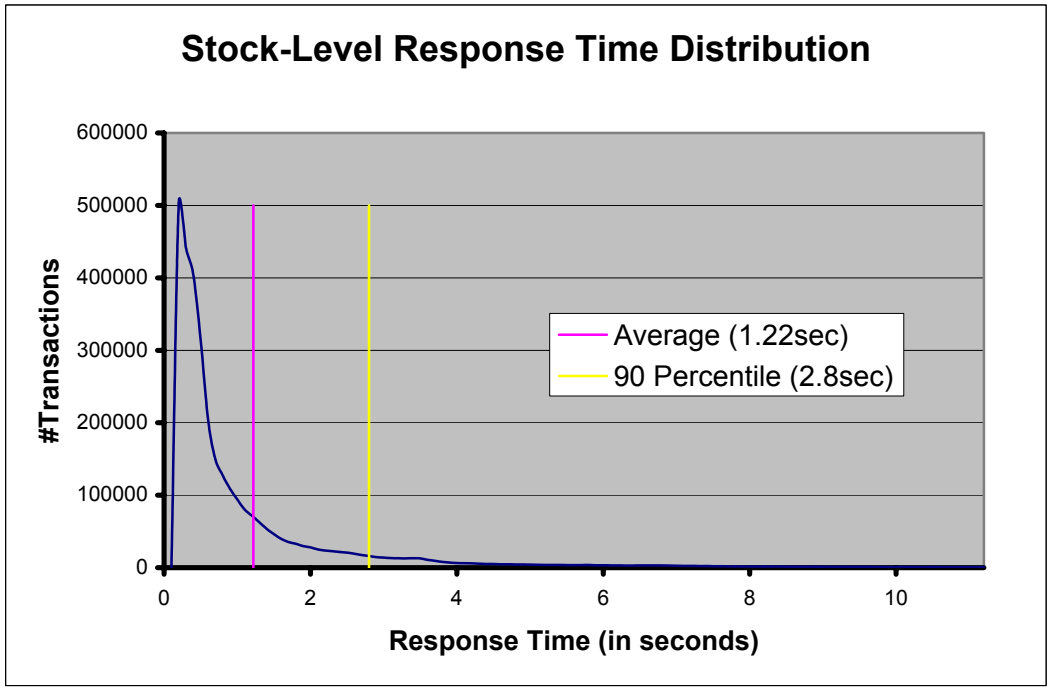


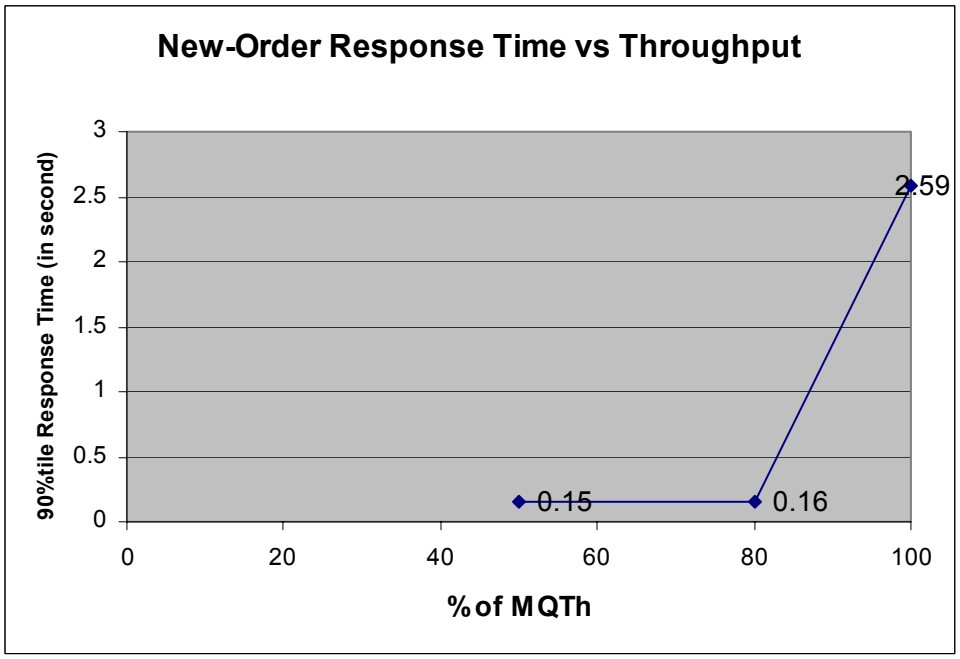
Figure 2.5 : Stock-Level Response Time Distribution



Response time versus Throughput Performance Curve

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

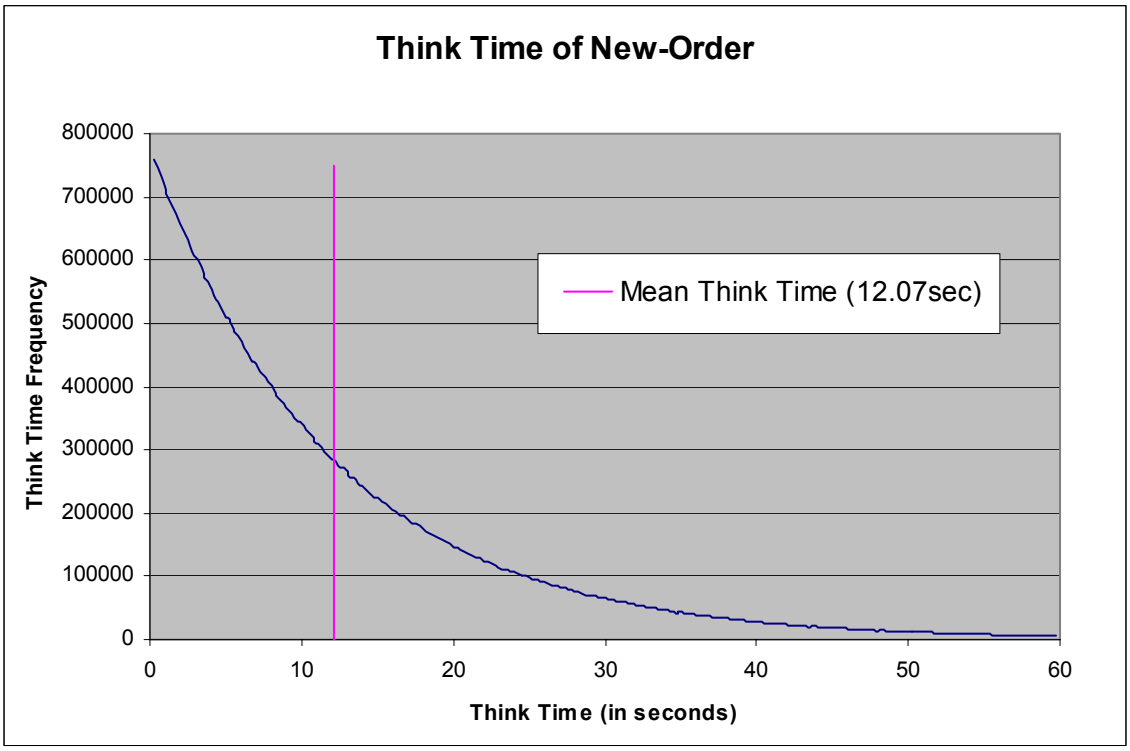
Figure 2.6 Response Time Performance vs. Throughput Curve



New-Order Think Time Frequency Distribution

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

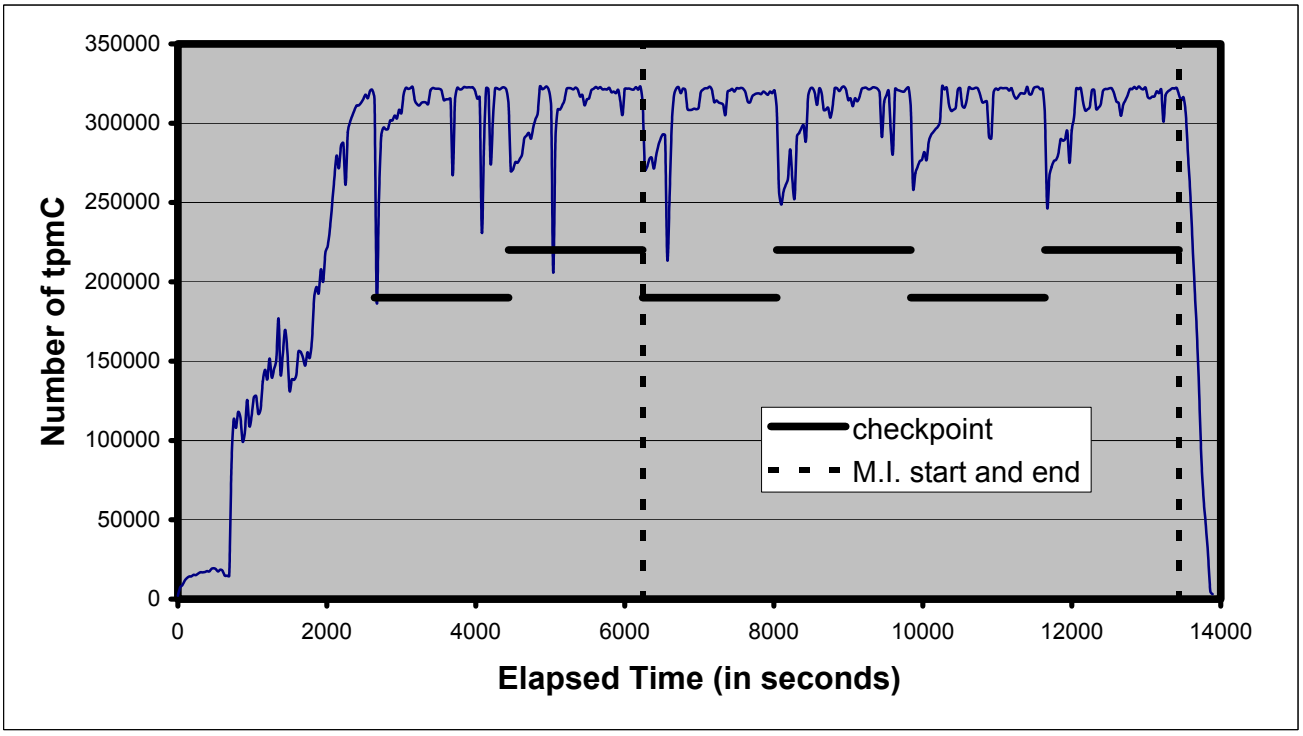
Figure 2.7 New-Order Think Time



New-Order Throughput vs. Elapsed Time

A graph of throughput versus elapsed time (see Clause 5.6.4) must be reported for the New-Order transaction.

Figure 2.8 New Order Throughput vs. Elapsed Time



Steady State

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

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

Work Performed During Steady State

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

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

Measurement Period Duration and Checkpoint Duration

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

	Start	End	Duration (in second)
M.I.	11:27:20	13:27:20	7200
1st Checkpoint	11:27:23	11:57:08	1785
2nd Checkpoint	11:57:22	12:27:07	1785
3rd Checkpoint	12:27:21	12:57:06	1785
4th Checkpoint	12:57:19	13:27:04	1785

Regulation of Transaction Mix

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

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

Transaction Statistics

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

The above statistics are disclosed in Table 1.

Checkpoint Count and Location

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

There was one checkpoint before measurement and four checkpoints during measurement.
The time of the first checkpoint during the measurement interval is 3.6 seconds after the start of the measurement, and the checkpoint interval is 30 minutes.

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

Descriptions of RTE

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

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

Loss of Terminal Connections

The number of terminal connections lost during the Measurement Interval must be disclosed (see Clause 6.6.2).

No terminal connections were lost.

Emulated Components

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

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

Functional Diagrams and Detail of Driver System

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

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

Network configurations and Driver system

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

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

Network Bandwidth

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

The Database server contains one 1Gbps LAN adapter. The LAN adapter was connected to a 1000/100/10 LAN switch with 1Gbps bandwidth. 32 front-end clients were connected to the 1000/100/10 LAN switch with 100Mbps bandwidth. Each front-end clients has two 100Mbps adapter, one for connecting to a back-end database server and another one for connecting to RTE system. The network bandwidth between RTE system and the front-end clients is 100Mbps. 32 segments were used for the connection of the tested configuration.

Operator Intervention

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

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

Clause 7 : Pricing Related Items

Hardware and Software Components

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

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

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

Availability

The committed delivery date for general availability (availability date) of products used in the price calculations 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. This single date must be reported on the first page of the Executive Summary. All availability dates, whether for individual components or for the SUT as a whole, must be disclosed to a precision of one day.

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

NEC TX7/i9510, 1GHz will be available by December 31, 2002.
Microsoft SQL Server will be available by December 31, 2002.

Throughput, and Price Performance

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

- Maximum Qualified Throughput 308,620.82 tpmC
- Price per tpmC : $ 14.96 per tpmC
- Total 3-yesr cost of ownership

Country Specific Pricing

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

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

Usage Pricing

For any usage pricing, the sponsor must disclose:

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

The component pricing based on usage is shown below:

- 32 SQL Server2000 Ent. Edition(64-bit) ,Processor License
- 1 Windows .NET Datacenter Server
- 32 Windows2000 Server, Server License
- 1 Visual C++ Professional 6.0 Win32

System Pricing

System pricing should include subtotals for the following components: Server Hardware, Server Software, Client Hardware, Client Software, and Network Components .

System pricing must include line item indication where non-sponsoring companies' brands are used. System pricing must also include line item indication of third party pricing.

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

Clause 8 : Audit Related Items

Auditor's Report

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

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

Availability of the Full Disclosure Report

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

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

Auditor's letter

INFO SIZING

TPC TRANSACTION PROCESSING PERFORMANCE COUNCIL CERTIFIED AUDITOR

Sponsor: Katsuya Furukawa
NEC Corporation
1-10 Nisshincho
Fuchu City Tokyo 183-8501

September 6, 2002

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

Platform: NEC TX7/i9510 c/s
Operating system: Microsoft Windows .NET Server 2003 Datacenter Edition
Database Manager: Microsoft SQL Server 2000 Enterprise Edition (64bit)
Transaction Manager: Microsoft COM+

The results were:

CPU's Speed	Memory	Disks	NewOrder 90% Response Time	tpmC
Server: NEC TX7/i9510				
32 x Itanium-2 (1 GHz)	256 GB (3 MB cache/cpu)	1 x 18 GB int. 1200 x 18 GB ext. 28 x 36 GB ext.	2.59 Seconds	308,620.82
Thirty two Clients: NEC Express 5800/120Rd-2 (Specification for each)				
2 x Pentium III (1.26 GHz)	512 MB (512 KB cache/cpu)	1 x 18 GB	n/a	n/a

In my opinion, these performance results were produced in compliance with the TPC requirements for Revision 5.0 of the benchmark.

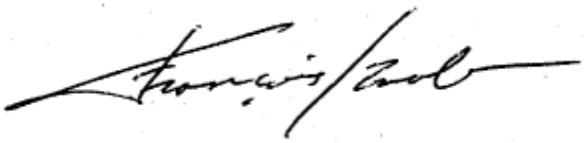
The following verification items were given special attention:

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

Additional Audit Notes:

None.

Respectfully Yours,



François Raab, President

1373 North Franklin Street • Colorado Springs, CO 80903-2527 • **Office**: 719/473-7555 • **Fax**: 719/473-7554

Appendix A : Application Source Code

webclnt.dsp

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

# TARGTYPE "Win32 (x86) Application" 0x0101

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

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

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

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

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

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

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

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

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

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

!ENDIF

# Begin Target

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

webclnt.dsw

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

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

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

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

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

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

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

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

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

Package=<5>
{{{
}}}

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

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

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

Package=<5>
{{{
}}}

Package=<4>
{{{
    Begin Project Dependency
    Project_Dep_Name db_dblib_dll
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name db_odbc_dll
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name tm_tuxedo_dll
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name tm_com_dll
    End Project Dependency
    Begin Project Dependency
    Project_Dep_Name tm_encina_dll
    End Project Dependency
}}}

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

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

Package=<5>
{{{
}}}

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

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

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

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

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

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

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

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

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

Package=<5>
{{{
}}}

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

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

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

Package=<5>
{{{
}}}

Package=<4>
{{{
}}}

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

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

Package=<5>
{{{
}}}

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

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

Global:

Package=<5>
{{{
}}}

Package=<3>
{{{
}}}

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

common/src/error.h

```
/*            FILE:                         ERROR.H
 *                                                        Microsoft TPC-C Kit Ver.
4.20.000
 *                                                        Copyright Microsoft, 1999
 *              All Rights 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
// TPC-W error types
#define ERR_TYPE_TPCW_CONN
                        50                          //Benchcraft connection class
#define ERR_TYPE_TPCW_HTML
                        51                          //error from TpcwHtml dll
#define ERR_TYPE_TPCW_USER
                        52                          //error from TPC-W user class
#define ERR_TYPE_TPCW_ENG_BASE
                        53
#define ERR_TYPE_TPCW_ENG_OS
                        54
#define ERR_TYPE_HTML_RESP
                        55
#define ERR_TYPE_TPCW_ODBC
                        56
#define ERR_TYPE_SCHANNEL
                        57

#define ERR_INS_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 recieve HTML
pages."


class CBaseErr
{
public:

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


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

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



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


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

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

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

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

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

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

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

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


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


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

            //short       m_errType;
};

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

            CSocketErr(Action eAction, LPCTSTR szLocation = NULL);

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

            Action        m_eAction;
            char          *m_szErrorText;

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

};

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

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

            Action        m_eAction;

private:
            char m_szMsg[ERR_MSG_BUF_SIZE];

};

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

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


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

            int ErrorType() {return ERR_BUF_OVERFLOW;}
```

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

common/src/ReadRegistry.cpp

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


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

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

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

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

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

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

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

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

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

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

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

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

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

            RegCloseKey(hKey);

            return FALSE;
}
```

common/src/ReadRegistry.h

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

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

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

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

BOOL ReadTPCCRegistrySettings( TPCCREGISTRYDATA *pReg );
```

common/src/trans.h

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

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

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

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

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

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

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

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

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

            // output params
            EXEC_STATUS                             exec_status_code;
            TIMESTAMP_STRUCT            h_date;
            char
w_street_1[ADDRESS_LEN+1];
            char
w_street_2[ADDRESS_LEN+1];
            char                                    w_city[ADDRESS_LEN+1];
            char                                    w_state[STATE_LEN+1];
            char                                    w_zip[ZIP_LEN+1];
            char
d_street_1[ADDRESS_LEN+1];
            char
d_street_2[ADDRESS_LEN+1];
            char                                    d_city[ADDRESS_LEN+1];
            char                                    d_state[STATE_LEN+1];
```

```
            char                            d_zip[ZIP_LEN+1];
            char
c_first[FIRST_NAME_LEN+1];
            char                                    c_middle[MIDDLE_NAME_LEN
+ 1];
            char
c_street_1[ADDRESS_LEN+1];
            char
c_street_2[ADDRESS_LEN+1];
            char                                    c_city[ADDRESS_LEN+1];
            char                                    c_state[STATE_LEN+1];
            char                                    c_zip[ZIP_LEN+1];
            char                                    c_phone[PHONE_LEN+1];
            TIMESTAMP_STRUCT            c_since;
            char                                    c_credit[CREDIT_LEN+1];
            double                                  c_credit_lim;
            double                                  c_discount;
            double                                  c_balance;
            char                                    c_data[200+1];
} PAYMENT_DATA, *PPAYMENT_DATA;

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

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

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


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

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

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

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

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

common/src/txn_base.h

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

#pragma once

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

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

                        virtual PNEW_ORDER_DATA
            BuffAddr_NewOrder()                     = 0;
                        virtual PPAYMENT_DATA
            BuffAddr_Payment()                      = 0;
                        virtual PDELIVERY_DATA
            BuffAddr_Delivery()                     = 0;
                        virtual PSTOCK_LEVEL_DATA  BuffAddr_StockLevel()
            = 0;
                        virtual PORDER_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
 *
 */

#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

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


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

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


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

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

                        int     DeltaT1;                        // menu time
(ms)
                        int     DeltaT2;                        // keying
time (ms)
                        int     DeltaT3;                        // think time
(ms)
                        int     DeltaT4;                        // response
time (ms)
                        int     RTDelay;                        // response
time delay (ms)
                        int                           TxnError;
              // error code providing more detail for TxnStatus
                        int                           w_id;
              // warehouse ID
                        BYTE          d_id;
              // assigned district ID for this thread
                        BYTE          d_id_ThisTxn;// district ID chosen for
this particular
                        BYTE          TxnStatus;                // completion
status for txn to indicate errors
                        BYTE          reserved;                 // for word
alignment
                        TXN_DETAILS   TxnDetails;  //
              } TXN_RECORD_TPCC, *PTXN_RECORD_TPCC;

              // TPC-C Deferred Delivery Txn Record Layout:
              //
    //Incorporating delivery transaction information into the above
              //structure would increase the size of TXN_DETAILS from 8 to 42
bytes.
    //Hence, we store delivery transaction details in a separate structure.
    //
              typedef struct _TXN_RECORD_TPCC_DELIV_DEF
              {
                        // common header; must exactly match
TXN_RECORD_HEADER
                        JULIAN_TIME   TxnStartTO;               // start of
txn
                        BYTE          TxnType;
              // = TXN_REC_TYPE_TPCC_DELIV_DEF
                        BYTE          TxnSubType;
              // = 0
                                  // end of common header

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



#define                   TXN_LOG_VERSION                         2
#define                   TXN_DATA_START                          4096
#define       // offset in log file where log records start
                          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

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

              } TXN_LOG_HEADER, *PTXN_LOG_HEADER;


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



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

#define       NUM_READ_BUFFERS                        1
#define       NUM_WRITE_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

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

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

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

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

                        FILE
              *tmpFile;                 //temp file for merging sorted pieces
                        PBLOCK_HEADER             tmpHeaders;
              //sorted pointers block header
                        BYTE
              **recPointers;            //record pointer buffers for each sorted
block
                        PTXN_RECORD_HEADER        *recBuffers; //record
buffers for each sorted block
                        int                                             *PointersRead;
                                  //# of pointers processed in each block
                        BOOL                          *BlockAvailable;
              //whether to check a particular block for jmin

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

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

                        int Write(BYTE *ptr, DWORD Size);
```

```
                        static void LogFileIO(CTxnLog *);

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

            public:

                        CTxnLog::CTxnLog(LPCTSTR szFileName, DWORD dwOpts);
                        ~CTxnLog(void);

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

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

                        void CloseTransactionLogFile(void);

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

                        int Sort(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 *ErrorText()
                        {
                                    static char *szMsgs[] = {
                                                "File format is invalid.",
                                                "Log file version is
unknown.",
                                                "Log file is broken.",
                                                "Log file is not sorted",
                                                "Internal Error: Record
Time Sequence invalid.",
                                                ""
                                    };

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

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

db_dblib_dll/db_dblib_dll.dsp

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

!ENDIF

# Begin Target

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

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

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

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

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

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

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

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

db_dblib_dll/src/tpcc_dblib.cpp

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

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

#define DBNTWIN32
#include <sqlfront.h>
#include <sqldb.h>

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

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

#include "..\..\common\src\error.h"
#include "..\..\common\src\trans.h"
#include "..\..\common\src\txn_base.h"
#include "tpcc_dblib.h"

#define       DEFCLPACKSIZE                         4096

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

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

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

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

```
                                        dbinit();                   // initialize
dblib
                                        break;

                              case DLL_PROCESS_DETACH:
                                        dbexit();                   // close all
dblib structures/connections
                                        break;

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


int err_handler(DBPROCESS *dbproc, int severity, int dberr, int oserr, LPCSTR
dberrstr, LPCSTR oserrstr)
{
                    CTPCC_DBLIB                         *pConn;

                    assert(dbproc != NULL);
                    pConn = (CTPCC_DBLIB*)dbgetuserdata(dbproc);

                    if (pConn != NULL)
                    {
                              pConn->SetDbLibError( severity, dberr, oserr,
dberrstr, oserrstr );
                    }
                    return INT_CANCEL;
}

/* FUNCTION: int msg_handler(DBPROCESS *dbproc, DBINT msgno, int msgstate, int
severity, char *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::eDbSetMaxProcs);
                    }

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

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

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


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

                    // set time to wait for login
                    if (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::eDbSqlExec);

                    DiscardNextResults(2);

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

                    if (dbrpcexec(m_dbproc) == FAIL)
                              ThrowError(CDBLIBERR::eDbRpcExec);

                    if (dbresults(m_dbproc) != SUCCEED)
                              ThrowError(CDBLIBERR::eDbResults);

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

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


                    DiscardNextRows(0);
                    DiscardNextResults(0);
}


CTPCC_DBLIB::~CTPCC_DBLIB( void )
{
                    // close db connection and deallocate 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::eDbNextRow);
				else
					break;
			}
			iRowsRead++;
		}

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

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

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

		ThrowError(CDBLIBERR::eDbResults);
				else
					break;
			}

			DiscardNextRows(-1);
			iResultsRead++;
		}

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

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

		ResetError();

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

				dbrpcparam(m_dbproc, NULL, 0, SQLINT2, -
1, -1, (BYTE *) &m_txn.StockLevel.w_id);		// @w_id
smallint
				dbrpcparam(m_dbproc, NULL, 0, SQLINT1, -
1, -1, (BYTE *) &m_txn.StockLevel.d_id);		// @d_id
tinyint
				dbrpcparam(m_dbproc, NULL, 0, SQLINT2, -
1, -1, (BYTE *) &m_txn.StockLevel.threshold);	// @threshhold smallint

				if (dbrpcexec(m_dbproc) == FAIL)

		ThrowError(CDBLIBERR::eDbRpcExec);

				if (dbresults(m_dbproc) != SUCCEED)

		ThrowError(CDBLIBERR::eDbResults);

				if (dbnextrow(m_dbproc) != REG_ROW)

		ThrowError(CDBLIBERR::eDbNextRow);

				if (pData=dbdata(m_dbproc, 1))
					m_txn.StockLevel.low_stock
= *((long *) pData);

				DiscardNextRows(0);
				DiscardNextResults(0);

				m_txn.StockLevel.exec_status_code = eOK;
				return;
			}
			catch (CSQLERR *e)
			{
				if ((e->m_msgno == 1205 ||
					(e->m_msgno ==
iErrOleDbProvider &&
					strstr(e->m_msgtext,
sErrTimeoutExpired) != NULL)) &&
					(++iTryCount <=
iMaxRetries))
				{
					// hit deadlock; backoff
for increasingly longer period
					delete e;
					Sleep(10 * iTryCount);
				}
				else
					throw;
			}
			// while (TRUE)

			//if (iTryCount)
			//	throw new
CTPCC_DBLIB_ERR(CTPCC_DBLIB_ERR::ERR_RETRIED_TRANS, iTryCount);
}


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

		int					iTryCount = 0;
		const BYTE	*pData;

		ResetError();

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

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

				// check whether any order lines are for
a remote warehouse
				m_txn.NewOrder.o_all_local = 1;
				for (i = 0; i < m_txn.NewOrder.o_ol_cnt;
i++)
				{
					if
(m_txn.NewOrder.OL[i].ol_supply_w_id != m_txn.NewOrder.w_id)
					{
		m_txn.NewOrder.o_all_local = 0;  // at least one remote warehouse
						break;
					}
				}
				dbrpcparam(m_dbproc, NULL, 0, SQLINT1, -
1, -1, (BYTE *) &m_txn.NewOrder.o_all_local);

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

				if (dbrpcexec(m_dbproc) == FAIL)

		ThrowError(CDBLIBERR::eDbRpcExec);

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

		ThrowError(CDBLIBERR::eDbResults);

					if (dbnumcols(m_dbproc) !=
5)

		ThrowError(CDBLIBERR::eWrongNumCols);

					if (dbnextrow(m_dbproc) !=
REG_ROW)

		ThrowError(CDBLIBERR::eDbNextRow);

					if(pData=dbdata(m_dbproc,
1))

		UtilStrCpy(m_txn.NewOrder.OL[i].ol_i_name, 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::eDbResults);

				if (dbnextrow(m_dbproc) != REG_ROW)

		ThrowError(CDBLIBERR::eDbNextRow);

				if (dbnumcols(m_dbproc) != 8)

		ThrowError(CDBLIBERR::eWrongNumCols);

				if (pData=dbdata(m_dbproc, 1))
					dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,1), SQLFLT8, (BYTE
*)&m_txn.NewOrder.w_tax,
8);
				if (pData=dbdata(m_dbproc, 2))
					dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,2), SQLFLT8, (BYTE
*)&m_txn.NewOrder.d_tax,
8);
				if (pData=dbdata(m_dbproc, 3))
					m_txn.NewOrder.o_id =
(*(DBINT *) pData);
				if (pData=dbdata(m_dbproc, 4))

		UtilStrCpy(m_txn.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_credit, pData, dbdatlen(m_dbproc, 6));
				if (pData=dbdata(m_dbproc, 7))
				{
					datetime = *((DBDATETIME
*) pData);
					dbdatecrack(m_dbproc,
```

```
&daterec, &datetime);

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

            m_txn.NewOrder.o_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_RETRIED_TRANS, iTryCount);
}


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

            int                                 iTryCount = 0;
            const BYTE    *pData;

            ResetError();

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

                                    dbrpcparam(m_dbproc, NULL, 0, SQLINT2, -
1, -1, (BYTE *) &m_txn.Payment.w_id);
                                    dbrpcparam(m_dbproc, NULL, 0, SQLINT2, -
1, -1, (BYTE *) &m_txn.Payment.c_w_id);
                                    dbrpcparam(m_dbproc, NULL, 0, SQLFLT8, -
1, -1, (BYTE *) &m_txn.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::eDbRpcExec);

                                    if (dbresults(m_dbproc) != SUCCEED)

            ThrowError(CDBLIBERR::eDbResults);

                                    if (dbnextrow(m_dbproc) != REG_ROW)

            ThrowError(CDBLIBERR::eDbNextRow);

                                    if (dbnumcols(m_dbproc) != 27)

            ThrowError(CDBLIBERR::eWrongNumCols);

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

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

            m_txn.Payment.h_date.minute = daterec.minute;

            m_txn.Payment.h_date.second = daterec.second;
                                    }
                                    if (pData=dbdata(m_dbproc, 4))

            UtilStrCpy(m_txn.Payment.w_street_1, pData, 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_RETRIED_TRANS, iTryCount);
}


void CTPCC_DBLIB::OrderStatus()
{
            int                                 i;
            DBDATETIME    datetime;
            DBDATEREC     daterec;

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

            ResetError();

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

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

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

                                    if (dbrpcexec(m_dbproc) == FAIL)

            ThrowError(CDBLIBERR::eDbRpcExec);

                                    // Get order lines
                                    if (dbresults(m_dbproc) != SUCCEED)
                                    {
                                                if ((m_DbLibErr == NULL)
&& (m_SqlErr == NULL))
                                                            throw new
CTPCC_DBLIB_ERR( CTPCC_DBLIB_ERR::ERR_NO_SUCH_ORDER );
                                                else

            ThrowError(CDBLIBERR::eDbResults);
                                    }

                                    if (dbnumcols(m_dbproc) != 5)
```

```
		ThrowError(CDBLIBERR::eWrongNumCols);

                                        i = 0;
                                        while (TRUE)
                                        {
                                                rc = dbnextrow(m_dbproc);
                                                if (rc == NO_MORE_ROWS)
                                                        break;
                                                if (rc != REG_ROW)

		ThrowError(CDBLIBERR::eDbNextRow);

                                                if(pData=dbdata(m_dbproc,
1))

		m_txn.OrderStatus.OL[i].ol_supply_w_id = (*(DBSMALLINT *) pData);
                                                if(pData=dbdata(m_dbproc,
2))

		m_txn.OrderStatus.OL[i].ol_i_id = (*(DBINT *) pData);
                                                if(pData=dbdata(m_dbproc,
3))

		m_txn.OrderStatus.OL[i].ol_quantity = (*(DBSMALLINT *) pData);
                                                if(pData=dbdata(m_dbproc,
4))

		dbconvert(m_dbproc, SQLNUMERIC, (LPCBYTE)pData,
dbdatlen(m_dbproc,4),

		  SQLFLT8, (BYTE *)&m_txn.OrderStatus.OL[i].ol_amount, 8);
                                                if(pData=dbdata(m_dbproc,
5))
                                                {
                                                        datetime =
*((DBDATETIME *) pData);

		dbdatecrack(m_dbproc, &daterec, &datetime);

		m_txn.OrderStatus.OL[i].ol_delivery_d.year   = daterec.year;

		m_txn.OrderStatus.OL[i].ol_delivery_d.month  = daterec.month;

		m_txn.OrderStatus.OL[i].ol_delivery_d.day    = daterec.day;

		m_txn.OrderStatus.OL[i].ol_delivery_d.hour   = daterec.hour;

		m_txn.OrderStatus.OL[i].ol_delivery_d.minute = daterec.minute;

		m_txn.OrderStatus.OL[i].ol_delivery_d.second = daterec.second;
                                                }
                                                i++;
                                        }
                                        m_txn.OrderStatus.o_ol_cnt = i;


                                        if (dbresults(m_dbproc) != SUCCEED)

		ThrowError(CDBLIBERR::eDbResults);

                                        if (dbnextrow(m_dbproc) != REG_ROW)

		ThrowError(CDBLIBERR::eDbNextRow);

                                        if (dbnumcols(m_dbproc) != 8)

		ThrowError(CDBLIBERR::eWrongNumCols);

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

		UtilStrCpy(m_txn.OrderStatus.c_last, pData, dbdatlen(m_dbproc,2));
                                        if(pData=dbdata(m_dbproc, 3))

		UtilStrCpy(m_txn.OrderStatus.c_first, pData,
dbdatlen(m_dbproc,3));                  if(pData=dbdata(m_dbproc, 4))

		UtilStrCpy(m_txn.OrderStatus.c_middle, pData, dbdatlen(m_dbproc,
4));                                    if(pData=dbdata(m_dbproc, 5))
                                        {
                                                datetime = *((DBDATETIME
*) pData);
                                                dbdatecrack(m_dbproc,
&daterec, &datetime);

		m_txn.OrderStatus.o_entry_d.year   = daterec.year;

		m_txn.OrderStatus.o_entry_d.month  = daterec.month;

		m_txn.OrderStatus.o_entry_d.day    = daterec.day;

		m_txn.OrderStatus.o_entry_d.hour   = daterec.hour;

		m_txn.OrderStatus.o_entry_d.minute = daterec.minute;

		m_txn.OrderStatus.o_entry_d.second = daterec.second;
                                        }
                                        if(pData=dbdata(m_dbproc, 6))

		m_txn.OrderStatus.o_carrier_id = (*(DBSMALLINT *) pData);
                                        if(pData=dbdata(m_dbproc, 7))
                                                dbconvert(m_dbproc,
SQLNUMERIC, (LPCBYTE)pData, dbdatlen(m_dbproc,7),
SQLFLT8, (BYTE *)&m_txn.OrderStatus.c_balance, 8);
                                        if(pData=dbdata(m_dbproc, 8))
                                                m_txn.OrderStatus.o_id =
(*(DBINT *) pData);
                                        DiscardNextRows(0);
                                        DiscardNextResults(0);


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

		m_txn.OrderStatus.exec_status_code = eOK;

                                        return;
                                }
                                catch (CSQLERR *e)
                                {
                                        if ((e->m_msgno == 1205 ||
                                                (e->m_msgno ==
iErrOleDbProvider &&
                                                strstr(e->m_msgtext,
sErrTimeoutExpired) != NULL)) &&
                                                (++iTryCount <=
iMaxRetries))
                                        {
                                                // hit deadlock; backoff
for increasingly longer period
                                                delete e;
                                                Sleep(10 * iTryCount);
                                        }
                                        else
                                                throw;
                                }
                        }               // while (TRUE)

//                      if (iTryCount)
//                              throw new
CTPCC_DBLIB_ERR(CTPCC_DBLIB_ERR::ERR_RETRIED_TRANS, iTryCount);
}


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

                ResetError();

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

                                dbrpcparam(m_dbproc, NULL, 0, SQLINT2, -
1, -1, (BYTE *) &m_txn.Delivery.w_id);  dbrpcparam(m_dbproc, NULL, 0, SQLINT1, -
1, -1, (BYTE *) &m_txn.Delivery.o_carrier_id);

                                if (dbrpcexec(m_dbproc) == FAIL)

                ThrowError(CDBLIBERR::eDbRpcExec);

                                if (dbresults(m_dbproc) != SUCCEED)

                ThrowError(CDBLIBERR::eDbResults);

                                if (dbnextrow(m_dbproc) != REG_ROW)

                ThrowError(CDBLIBERR::eDbNextRow);

                                if (dbnumcols(m_dbproc) != 10)

                ThrowError(CDBLIBERR::eWrongNumCols);

                                for (i=0; i<10; i++)
                                {               if (pData =
dbdata(m_dbproc, i+1))

                m_txn.Delivery.o_id[i] = *((DBINT *)pData);
                                }

                                DiscardNextRows(0);
                                DiscardNextResults(0);

                                m_txn.Delivery.exec_status_code = eOK;
                                return;
                        }
                        catch (CSQLERR *e)
                        {
                                if ((e->m_msgno == 1205 ||
                                        (e->m_msgno ==
iErrOleDbProvider &&
                                        strstr(e->m_msgtext,
sErrTimeoutExpired) != NULL)) &&
                                        (++iTryCount <=
iMaxRetries))
                                {
                                        // hit deadlock; backoff
for increasingly longer period
                                        delete e;
                                        Sleep(10 * iTryCount);
                                }
                                else
                                        throw;
                        }
                }               // while (TRUE)

//              if (iTryCount)
//                      throw new
CTPCC_DBLIB_ERR(CTPCC_DBLIB_ERR::ERR_RETRIED_TRANS, iTryCount);
}

void CTPCC_DBLIB::ResetError()
{
                if (m_DbLibErr != NULL)
                {
                        delete m_DbLibErr;
                        m_DbLibErr = (CDBLIBERR*)NULL;
                }

                if (m_SqlErr != NULL)
                {
                        delete m_SqlErr;
                        m_SqlErr = (CSQLERR*)NULL;
                }
                return;
}
```

db_dblib_dll/src/tpcc_dblib.h

```
/*              FILE:                           TPCC_DBLIB.H
 *                                                      Microsoft TPC-C Kit Ver.
4.20.000
 *                                                      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;};
                        int ErrorNum() {return m_msgno;};
                        char *ErrorText() {return m_msgtext;};

};

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

```
        // error from dbsetmaxprocs
                        eDbProcHandler
        // error from either dbprocerrhandle or dbprocmsghandle
                };

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

                        m_dberrstr = NULL;
                        m_oserrstr = NULL;
                };

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

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

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

};

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

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

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

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

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

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ".\bin"
# PROP Intermediate_Dir ".\obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX
/FD /c
# ADD CPP /nologo /MD /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /FD
/c
# ADD BASE MTL /nologo /D "NDEBUG" /mktyplib203 /o /win32 "NUL"
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o /win32 "NUL"
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
/out:".\bin/tpcc_odbc.dll"

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

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "Debug"
# PROP BASE Intermediate_Dir "Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ".\bin"
# PROP Intermediate_Dir ".\obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD CPP /nologo /MDd /W3 /GX /ZI /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS" /YX
/FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o /win32 "NUL"
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o /win32 "NUL"
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib

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

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

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

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

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

!ENDIF

# Begin Target

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

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

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

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

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

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

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

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

db_odbc_dll/src/tpcc_odbc.cpp

```
/*          FILE:                       TPCC_ODBC.CPP
 *                                                  Microsoft TPC-C Kit Ver.
4.20.000
 *                                                  Copyright Microsoft, 1999
 *          All Rights Reserved
```

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

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

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

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

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

#include "..\..\common\src\error.h"
#include "..\..\common\src\trans.h"
#include "..\..\common\src\txn_base.h"
#include "tpcc_odbc.h"

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

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

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

static SQLHENV henv = SQL_NULL_HENV;
            // ODBC environment handle

BOOL APIENTRY DllMain(HMODULE hModule, DWORD ul_reason_for_call, LPVOID
lpReserved)
{
            switch( ul_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
{
            return new CTPCC_ODBC( szServer, szUser, szPassword, szHost,
szDatabase );
}


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

            // initialization
            m_hdbc = SQL_NULL_HDBC;
            m_hstmt = SQL_NULL_HSTMT;

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

            m_descNewOrderCols1 = SQL_NULL_HDESC;
            m_descNewOrderCols2 = SQL_NULL_HDESC;
            m_descOrderStatusCols1 = SQL_NULL_HDESC;
            m_descOrderStatusCols2 = SQL_NULL_HDESC;


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

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

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

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

                        rc = SQLDriverConnect(m_hdbc, NULL,
(SQLCHAR*)szConnectStr, 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::eAllocHandle);

            {
                        char                        buffer[128];

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

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

                        SQLFreeHandle(SQL_HANDLE_STMT, m_hstmt);
            }

            // Bind parameters for each of 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_STMT, m_hstmtNewOrder);
            SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtPayment);
            SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtDelivery);
            SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtOrderStatus);
            SQLFreeHandle(SQL_HANDLE_STMT, m_hstmtStockLevel);

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

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

            pODBCErr = new CODBCERR();

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

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

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

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

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

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

            if (pODBCErr->m_odbcerrstr != NULL)
            {
                        delete [] pODBCErr->m_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::eAllocHandle);

            m_hstmt = m_hstmtStockLevel;

            int i = 0;
            if (   SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.StockLevel.w_id, 0, NULL) !=
SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_UTINYINT, SQL_TINYINT, 0, 0, &m_txn.StockLevel.d_id, 0, NULL) !=
SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.StockLevel.threshold, 0, NULL) !=
SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eBindParam);

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

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

            m_hstmt = m_hstmtStockLevel;

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

            ThrowError(CODBCERR::eExecDirect);

                                    if ( SQLFetch(m_hstmt) == SQL_ERROR )

            ThrowError(CODBCERR::eFetch);

                                    SQLFreeStmt(m_hstmt, SQL_CLOSE);

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

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

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

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

            m_hstmt = m_hstmtNewOrder;

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

            int i = 0;
            if (   SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.NewOrder.w_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_UTINYINT, SQL_TINYINT, 0, 0, &m_txn.NewOrder.d_id, 0, NULL) !=

SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SLONG, SQL_INTEGER, 0, 0, &m_txn.NewOrder.c_id, 0, NULL) !=

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

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

SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eBindParam);

            for (int j=0; j<MAX_OL_NEW_ORDER_ITEMS; j++)
            {
                        if (   SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SLONG, SQL_INTEGER, 0, 0, &m_txn.NewOrder.OL[j].ol_i_id, 0, NULL)

!= SQL_SUCCESS
                                    || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SSHORT, SQL_SMALLINT, 0, 0,

&m_txn.NewOrder.OL[j].ol_supply_w_id, 0, NULL) != SQL_SUCCESS
                                    || SQLBindParameter(m_hstmt, ++i,
SQL_PARAM_INPUT, SQL_C_SSHORT, SQL_SMALLINT, 0, 0,
&m_txn.NewOrder.OL[j].ol_quantity,

0, NULL) != SQL_SUCCESS
                                    )
                                    ThrowError(CODBCERR::eBindParam);
            }

            // set the bind offset pointer
            if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_ROW_BIND_OFFSET_PTR,
&m_BindOffset, SQL_IS_POINTER ) != SQL_SUCCESS )
                        ThrowError(CODBCERR::eSetStmtAttr);

            i = 0;
            if (   SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.NewOrder.OL[0].ol_i_name, sizeof(m_txn.NewOrder.OL[0].ol_i_name),
NULL) !=

SQL_SUCCESS
                                    || SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT,
&m_txn.NewOrder.OL[0].ol_stock, 0, NULL) != SQL_SUCCESS
                                    || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.NewOrder.OL[0].ol_brand_generic,

sizeof(m_txn.NewOrder.OL[0].ol_brand_generic), NULL) != SQL_SUCCESS
                                    || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.NewOrder.OL[0].ol_i_price, 0, NULL) != SQL_SUCCESS
                                    || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.NewOrder.OL[0].ol_amount, 0, NULL) != SQL_SUCCESS
                                    )
                                    ThrowError(CODBCERR::eBindCol);

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

            i = 0;
            if (   SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.NewOrder.w_tax, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.NewOrder.d_tax, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.NewOrder.o_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.NewOrder.c_last, sizeof(m_txn.NewOrder.c_last), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.NewOrder.c_discount, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.NewOrder.c_credit, sizeof(m_txn.NewOrder.c_credit), NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_TYPE_TIMESTAMP,
&m_txn.NewOrder.o_entry_d, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_no_commit_flag, 0, NULL) != SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eBindCol);
}

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

                                                                    // 0         1         2
                                                                    //
0123456789012345678901234567890123456789
            wchar_t
            szSqlTemplate[] = L"{call tpcc_neworder(?,?,?,?,?,"

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

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

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

            m_hstmt = m_hstmtNewOrder;

            // associate the parameter and column bindings for this
transaction
            if ( SQLSetStmtAttrW( m_hstmt, SQL_ATTR_APP_ROW_DESC,
m_descNewOrderCols1, SQL_IS_POINTER ) != SQL_SUCCESS )
                        ThrowError(CODBCERR::eSetStmtAttr);

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

            // check whether any order lines are for a remote warehouse
            m_txn.NewOrder.o_all_local = 1;
            for (i = 0; i < m_txn.NewOrder.o_ol_cnt; i++)
            {
                        if (m_txn.NewOrder.OL[i].ol_supply_w_id !=
m_txn.NewOrder.w_id)
                        {
                                    m_txn.NewOrder.o_all_local = 0;  // at
least one remote warehouse
                                    break;
                        }
            }

            while (TRUE)
            {
                        try
                        {
                                    m_BindOffset = 0;
                                    rc = SQLExecDirectW(m_hstmt,
(SQLWCHAR*)szSqlTemplate, SQL_NTS);
                                    if (rc != SQL_SUCCESS && rc !=
SQL_SUCCESS_WITH_INFO)

            ThrowError(CODBCERR::eExecDirect);

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

                                                if ( SQLFetch(m_hstmt) ==
SQL_ERROR)

            ThrowError(CODBCERR::eFetch);

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

            ThrowError(CODBCERR::eMoreResults);


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

            ThrowError(CODBCERR::eSetStmtAttr);

                                    if ( SQLFetch(m_hstmt) == SQL_ERROR)

            ThrowError(CODBCERR::eFetch);

                                    SQLFreeStmt(m_hstmt, SQL_CLOSE);

                                    if (m_no_commit_flag == 1)
                                    {

            m_txn.NewOrder.total_amount *= ((1 + m_txn.NewOrder.w_tax +
m_txn.NewOrder.d_tax) * (1 -

m_txn.NewOrder.c_discount));

            m_txn.NewOrder.exec_status_code = eOK;
                                    }
                                    else

            m_txn.NewOrder.exec_status_code = 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_RETRIED_TRANS, iTryCount);
}

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

            m_hstmt = m_hstmtPayment;

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

SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_DOUBLE, SQL_NUMERIC, 6, 2, &m_txn.Payment.h_amount, 0, NULL) !=

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

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

SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SLONG, SQL_INTEGER, 0, 0, &m_txn.Payment.c_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_CHAR, SQL_CHAR, sizeof(m_txn.Payment.c_last), 0,

&m_txn.Payment.c_last, sizeof(m_txn.Payment.c_last), NULL) != SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eBindParam);

            i = 0;
            if (   SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.Payment.c_id,                    0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.c_last,                  sizeof(m_txn.Payment.c_last), NULL) !=

SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_TYPE_TIMESTAMP,
&m_txn.Payment.h_date,                  0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
```

```
&m_txn.Payment.w_street_1, sizeof(m_txn.Payment.w_street_1), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.w_street_2, sizeof(m_txn.Payment.w_street_2), NULL) !=
SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_CHAR,
&m_txn.Payment.w_city,                  sizeof(m_txn.Payment.w_city), NULL) !=

SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_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);
}

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

        m_hstmt = m_hstmtPayment;

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

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

        ThrowError(CODBCERR::eExecDirect);

                        if ( SQLFetch(m_hstmt) == SQL_ERROR)

        ThrowError(CODBCERR::eFetch);

                        SQLFreeStmt(m_hstmt, SQL_CLOSE);

                        if (m_txn.Payment.c_id == 0)
                                throw new
CTPCC_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_SSHORT, SQL_SMALLINT, 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_SSHORT,
&m_txn.OrderStatus.OL[0].ol_supply_w_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_SLONG,
&m_txn.OrderStatus.OL[0].ol_i_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_SSHORT,
&m_txn.OrderStatus.OL[0].ol_quantity, 0, NULL) != SQL_SUCCESS
                        || SQLBindCol(m_hstmt, ++i, SQL_C_DOUBLE,
&m_txn.OrderStatus.OL[0].ol_amount, 0, NULL) != SQL_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);
}

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

        m_hstmt = m_hstmtOrderStatus;

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

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

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

        ThrowError(CODBCERR::eSetStmtAttr);

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

        ThrowError(CODBCERR::eExecDirect);

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

        ThrowError(CODBCERR::eSetStmtAttr);

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

        ThrowError(CODBCERR::eFetchScroll);

                        m_txn.OrderStatus.o_ol_cnt =
(short)m_RowsFetched;

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

        ThrowError(CODBCERR::eSetStmtAttr);

                                if
( SQLMoreResults(m_hstmt) == SQL_ERROR )

        ThrowError(CODBCERR::eMoreResults);

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

        ThrowError(CODBCERR::eFetch);
                                }

                        SQLFreeStmt(m_hstmt, SQL_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_code = eOK;

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

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

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

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

        m_hstmt = m_hstmtDelivery;

        int i = 0;
        if (   SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
```

```
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.Delivery.w_id, 0, NULL) != SQL_SUCCESS
                        || SQLBindParameter(m_hstmt, ++i, SQL_PARAM_INPUT,
SQL_C_SSHORT, SQL_SMALLINT, 0, 0, &m_txn.Delivery.o_carrier_id, 0, NULL) !=

SQL_SUCCESS
                        )
                        ThrowError(CODBCERR::eBindParam);

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

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

            m_hstmt = m_hstmtDelivery;

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

            ThrowError(CODBCERR::eExecDirect);

                                    if ( SQLFetch(m_hstmt) == SQL_ERROR )

            ThrowError(CODBCERR::eFetch);

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

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

//          if (iTryCount)
//                      throw new
CTPCC_ODBC_ERR(CTPCC_ODBC_ERR::ERR_RETRIED_TRANS, iTryCount);
}
```

db_odbc_dll/src/tpcc_odbc.h

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

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

class CODBCERR : public CBaseErr
{
            public:
                        enum ACTION
                        {
                                    eNone,
                                    eUnknown,
                                    eAllocConn,
            // error from SQLAllocConnect
                                    eAllocHandle,           // error from
SQLAllocHandle
                                    eConnOption,            // error from
SQLSetConnectOption
                                    eConnect,
            // error from SQLConnect
                                    eAllocStmt,
            // error from SQLAllocStmt
                                    eExecDirect,            // error from
SQLExecDirect
                                    eBindParam,
            // error from 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;};
                        int ErrorNum() {return m_NativeError;};
                        char *ErrorText() {return m_odbcerrstr;};

};

class CTPCC_ODBC_ERR : public CBaseErr
{
            public:
                        enum TPCC_ODBC_ERRS
                        {
                                    ERR_WRONG_SP_VERSION = 1,  // "Wrong
version of stored procs on database server"
                                    ERR_INVALID_CUST,
            // "Invalid Customer id,name."
                                    ERR_NO_SUCH_ORDER,
            // "No 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;};
                        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_hstmtPayment;
                        SQLHSTMT    m_hstmtDelivery;
                        SQLHSTMT    m_hstmtOrderStatus;
                        SQLHSTMT    m_hstmtStockLevel;

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

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

                        void ThrowError( CODBCERR::ACTION eAction );

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

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

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

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

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

};


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

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

install/install.dsp

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

# TARGTYPE "Win32 (x86) Application" 0x0101

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

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

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

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

odbc32.lib odbccp32.lib /nologo /subsystem:windows /machine:I386
# ADD LINK32 version.lib comctl32.lib kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib
```

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

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

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

odbc32.lib odbccp32.lib /nologo /subsystem:windows /debug /machine:I386
# ADD LINK32 version.lib comctl32.lib kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib

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

!ENDIF

# Begin Target

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

install/src/install.c

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

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

#include "resource.h"

#define     WM_INITTEXT             WM_USER+100

HICON                   hIcon;
HINSTANCE   hInst;

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

// TPC-C registry settings
TPCCREGISTRYDATA        Reg;

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

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


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

BOOL install_com(char *szDllPath);

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

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

            hInst = hInstance;

            InitCommonControls();

            hIcon = LoadIcon(hInstance, MAKEINTRESOURCE(IDI_ICON1));

            iRc = DialogBox(hInstance, MAKEINTRESOURCE(IDD_DIALOG4),
GetDesktopWindow(), LicenseDlgProc);
            if ( iRc )
            {
                        iRc = DialogBox(hInstance,
MAKEINTRESOURCE(IDD_DIALOG1), GetDesktopWindow(), MainDlgProc);
                        if ( iRc )
                        {
                                    DialogBoxParam(hInstance,
MAKEINTRESOURCE(IDD_DIALOG2), GetDesktopWindow(), UpdatedDlgProc, (LPARAM)iRc);
                        }
            }
            DestroyIcon(hIcon);
            return 0;
}

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

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

BOOL CALLBACK UpdatedDlgProc(HWND hwnd, UINT uMsg, WPARAM wParam, LPARAM lParam)
{
            switch(uMsg)
            {
                        case WM_INITDIALOG:
                                    switch(lParam)
                                    {
                                                case 1:
                                                case 2:

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

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

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

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

                                    // set default values
                                    ZeroMemory( &Reg, sizeof(Reg) );
                                    Reg.dwNumberOfDeliveryThreads = 4;
                                    Reg.dwMaxConnections = 100;
                                    Reg.dwMaxPendingDeliveries = 100;
                                    Reg.eDB_Protocol = DBLIB;
```

```
                                Reg.eTxnMon = None;
                                strcpy(Reg.szDbServer,
            "");
                                strcpy(Reg.szDbName,
            "tpcc");
                                strcpy(Reg.szDbUser,
            "sa");
                                strcpy(Reg.szDbPassword,   "");

                                iPoolThreadLimit =  iMaxPhysicalMemory *
2;
                                iThreadTimeout = 86400;
                                iListenBackLog = 15;
                                iAcceptExOutstanding = 40;

                                ReadTPCCRegistrySettings( &Reg );
                                ReadRegistrySettings();

                                GetModuleFileName(hInst, szExePath,
sizeof(szExePath));
                                GetVersionInfo(szDllPath, szExePath);

                               wsprintf(szTmp, "Version %d.%2.2d.%3.3d",
versionExeMS, versionExeMM, versionExeLS);
                                SetDlgItemText(hwnd, IDC_VERSION,
szTmp);

                                SetDlgItemText(hwnd, IDC_PATH,
szDllPath);

                                SetDlgItemText(hwnd, ED_DB_SERVER,
Reg.szDbServer);
                                SetDlgItemText(hwnd, ED_DB_USER_ID,
Reg.szDbUser);
                                SetDlgItemText(hwnd, ED_DB_PASSWORD,
Reg.szDbPassword);
                                SetDlgItemText(hwnd, ED_DB_NAME,
Reg.szDbName);

                                SetDlgItemInt(hwnd, ED_THREADS,
Reg.dwNumberOfDeliveryThreads, FALSE);
                                SetDlgItemInt(hwnd, ED_MAXCONNECTION,
Reg.dwMaxConnections, FALSE);
                                SetDlgItemInt(hwnd, ED_MAXDELIVERIES,
Reg.dwMaxPendingDeliveries, FALSE);
                                SetDlgItemInt(hwnd,
ED_IIS_MAX_THEAD_POOL_LIMIT, iPoolThreadLimit, FALSE);
                                SetDlgItemInt(hwnd,
ED_IIS_THREAD_TIMEOUT, iThreadTimeout, FALSE);
                                SetDlgItemInt(hwnd,
ED_IIS_LISTEN_BACKLOG, iListenBackLog, FALSE);
                                SetDlgItemInt(hwnd,
ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE, iAcceptExOutstanding, FALSE);

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

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

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

                                return TRUE;
                        case WM_PAINT:
                                if ( IsIconic(hwnd) )
                                {
                                        BeginPaint(hwnd, &ps);
                                        DrawIcon(ps.hdc, 0, 0,
hIcon);
                                        EndPaint(hwnd, &ps);
                                        return TRUE;
                                }
                                break;
                        case WM_COMMAND:
                                if ( HIWORD(wParam) == BN_CLICKED )
                                {
                                        switch( LOWORD(wParam) )
                                        {
                                                case
IDC_DBLIB:

                                return TRUE;

                                                case
IDC_ODBC:

                                return TRUE;

                                                case IDOK:

                                ProcessOK(hwnd, szDllPath);

                                return TRUE;

                                                case
IDCANCEL:

                                EndDialog(hwnd, FALSE);

                                return TRUE;

                                                default:

                                return FALSE;

                                        }
                                        break;
                                default:
                                        break;
                                }
                                return FALSE;
}

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

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

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

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

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

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

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


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


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

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

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

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

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

                Sleep(100);

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

                EndDialog(hwnd, rc);
                return;
}

static void ReadRegistrySettings(void)
{
                HKEY            hKey;
                DWORD           size;
                DWORD           type;

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

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

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

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

                        RegCloseKey(hKey);
                }

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

                        RegCloseKey(hKey);
                }
}

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

```
            if ( RegCreateKeyEx(HKEY_LOCAL_MACHINE,
"SOFTWARE\\Microsoft\\TPCC", 0, NULL, REG_OPTION_NON_VOLATILE, KEY_ALL_ACCESS,
NULL, &hKey,

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

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

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

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

sizeof(Reg.dwMaxPendingDeliveries));

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

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

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

                        RegFlushKey(hKey);
                        RegCloseKey(hKey);
            }

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

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

                        RegFlushKey(hKey);
                        RegCloseKey(hKey);
            }

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

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

                        RegFlushKey(hKey);
                        RegCloseKey(hKey);
            }

            return;
}

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

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

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

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

            hResInfo = FindResource(hInst, MAKEINTRESOURCE(iResourceId),
szResourceName);

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

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

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

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

            CloseHandle(hFile);

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

            return 1;
}

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


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

            szDllPath[0] =  0;
            bRc = TRUE;
            if ( RegOpenKeyEx(HKEY_LOCAL_MACHINE,
"SOFTWARE\\Microsoft\\InetStp", 0, KEY_ALL_ACCESS, &hKey) == ERROR_SUCCESS )
            {
                        sv = sizeof(szData);
                        iRc = RegQueryValueEx( hKey, "PathWWWRoot", NULL,
NULL, szData, &sv );  // used by IIS 5.0 & 6.0
                        if (iRc == ERROR_SUCCESS)
                        {
                                    bRc = FALSE;
                                    strcpy(szDllPath, szData);
                                    len = strlen(szDllPath);
                                    if ( szDllPath[len-1] != '\\' )
                                    {
                                                szDllPath[len] = '\\';
                                                szDllPath[len+1] = 0;
                                    }
                        }

                        RegCloseKey(hKey);
            }

            return bRc;
}

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

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

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

                        versionExeMS = vs->dwProductVersionMS;
                        versionExeLS = LOWORD(vs->dwProductVersionLS);
```

```
                        versionExeMM = HIWORD(vs->dwProductVersionLS);
                        free(ptr);
                }
                return;
}

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

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

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

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

                CloseServiceHandle(schService);
                return TRUE;

ServiceNotRunning:

                CloseServiceHandle(schService);
                return FALSE;
}

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

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

                if (! StartService(schService, 0, NULL) )
                        goto StartWWWebErr;
                //start Service pending, Check the status until the service is
running.
                if (! QueryServiceStatus(schService, &ssStatus) )
                        goto StartWWWebErr;
                while( ssStatus.dwCurrentState != SERVICE_RUNNING)
                {

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

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

                CloseServiceHandle(schService);
                return TRUE;

StartWWWebErr:
                CloseServiceHandle(schService);
                return FALSE;
}

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

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

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

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

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

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

                CloseServiceHandle(schService);
                return TRUE;

StopWWWebErr:
                CloseServiceHandle(schService);
                return FALSE;
}

static void UpdateDialog(HWND hDlg)
{
                MSG msg;

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

install/src/install.h

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

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

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

// Next default values for new objects
//
```

install/src/install.rc

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

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

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

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

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

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

IDD_DIALOG1 DIALOGEX 0, 0, 219, 351
STYLE DS_MODALFRAME | DS_CENTER | WS_MINIMIZEBOX | WS_POPUP | WS_CAPTION |
    WS_SYSMENU
CAPTION "TPC-C Web Client Installation Utility"
FONT 8, "MS Sans Serif"
BEGIN
    EDITTEXT        ED_THREADS,164,45,34,12,ES_RIGHT | ES_NUMBER,
                    WS_EX_RTLREADING
    EDITTEXT        ED_MAXDELIVERIES,164,59,34,12,ES_RIGHT | ES_NUMBER,
                    WS_EX_RTLREADING
    EDITTEXT        ED_MAXCONNECTION,164,73,34,12,ES_RIGHT | ES_NUMBER,
                    WS_EX_RTLREADING
    CONTROL         "None",IDC_TM_NONE,"Button",BS_AUTORADIOBUTTON |
                    WS_GROUP | WS_TABSTOP,43,100,33,10
    CONTROL         "COM",IDC_TM_MTS,"Button",BS_AUTORADIOBUTTON |
                    WS_TABSTOP,43,113,32,10
    CONTROL         "TUXEDO",IDC_TM_TUXEDO,"Button",BS_AUTORADIOBUTTON |
                    WS_TABSTOP,106,100,46,10
    CONTROL         "ENCINA",IDC_TM_ENCINA,"Button",BS_AUTORADIOBUTTON |
                    WS_DISABLED | WS_TABSTOP,106,113,43,10
    EDITTEXT        ED_DB_SERVER,131,152,67,12,ES_AUTOHSCROLL
    EDITTEXT        ED_DB_USER_ID,131,165,67,12,ES_AUTOHSCROLL
    EDITTEXT        ED_DB_PASSWORD,131,178,67,12,ES_AUTOHSCROLL
    EDITTEXT        ED_DB_NAME,131,191,67,12,ES_AUTOHSCROLL
    CONTROL         "DBLIB",IDC_DBLIB,"Button",BS_AUTORADIOBUTTON | WS_GROUP |
                    WS_TABSTOP,45,219,39,12
    CONTROL         "ODBC",IDC_ODBC,"Button",BS_AUTORADIOBUTTON | WS_TABSTOP,
                    91,219,39,12
    EDITTEXT        ED_IIS_MAX_THEAD_POOL_LIMIT,164,263,34,12,ES_RIGHT |
                    ES_NUMBER,WS_EX_RTLREADING
    EDITTEXT        ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE,164,277,34,12,ES_RIGHT |
                    ES_NUMBER,WS_EX_RTLREADING
    EDITTEXT        ED_IIS_THREAD_TIMEOUT,164,291,34,12,ES_RIGHT | ES_NUMBER,
                    WS_EX_RTLREADING
    EDITTEXT        ED_IIS_LISTEN_BACKLOG,164,305,34,12,ES_RIGHT | ES_NUMBER,
                    WS_EX_RTLREADING
    DEFPUSHBUTTON   "OK",IDOK,53,331,50,14
    PUSHBUTTON      "Cancel",IDCANCEL,119,331,50,14
    EDITTEXT        IDC_PATH,106,26,91,13,ES_AUTOHSCROLL | ES_READONLY
    LTEXT           "Number of Delivery Threads:",IDC_STATIC,35,45,115,12
    LTEXT           "Max Number of Connections:",IDC_STATIC,35,73,115,12
    RTEXT           "Version 4.11",IDC_VERSION,120,4,89,9
    LTEXT           "IIS Max Thread Pool Limit:",IDC_STATIC,36,263,115,12
    LTEXT           "Web Service Backlog Queue Size:",IDC_STATIC,36,277,115,
                    12
    LTEXT           "IIS Thread Timeout (seconds):",IDC_STATIC,36,291,115,12
    LTEXT           "IIS Listen Backlog:",IDC_STATIC,36,307,115,10
    GROUPBOX        "Database Interface",IDC_STATIC,35,208,163,27,WS_GROUP
    LTEXT           "Installation directory:",IDC_STATIC,35,29,71,10
    GROUPBOX        "Transaction Monitor",IDC_STATIC,33,90,165,37
    LTEXT           "Server Name:",IDC_STATIC,35,155,56,8
    LTEXT           "User ID:",IDC_STATIC,35,168,60,8
    LTEXT           "User Password:",IDC_STATIC,35,181,83,8
    LTEXT           "Database Name:",IDC_STATIC,35,194,54,8
    GROUPBOX        "SQL Server Connection Properties",IDC_STATIC,22,139,187,
                    102
    GROUPBOX        "Web Client Properties",IDC_STATIC,22,15,187,118
    GROUPBOX        "IIS Settings",IDC_STATIC,22,247,187,79
    LTEXT           "Max Pending Deliveries:",IDC_STATIC,35,59,115,12
END

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

IDD_DIALOG3 DIALOG DISCARDABLE  0, 0, 91, 40
STYLE DS_SYSMODAL | DS_MODALFRAME | DS_3DLOOK | DS_CENTER | WS_CAPTION
CAPTION "Installing TPC-C Web Client"
FONT 12, "Arial Black"
BEGIN
    CONTROL         "Progress1",IDC_PROGRESS1,"msctls_progress32",WS_BORDER,
                    7,20,77,13
    CTEXT           "Static",IDC_STATUS,7,7,77,12,SS_SUNKEN
END

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


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

#ifdef APSTUDIO_INVOKED
GUIDELINES DESIGNINFO DISCARDABLE
BEGIN
    IDD_DIALOG1, DIALOG
    BEGIN
        LEFTMARGIN, 22
        RIGHTMARGIN, 209
        VERTGUIDE, 35
        VERTGUIDE, 198
```

```
        TOPMARGIN, 4
        BOTTOMMARGIN, 345
    END

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

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

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


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

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

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

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

#endif    // APSTUDIO_INVOKED


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

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

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

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

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

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

#endif    // !_MAC


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

IDR_LICENSE1            LICENSE DISCARDABLE     "license.txt"

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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


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


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

install/src/install_com.cpp

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

#define _WIN32_WINNT 0x0500

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

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

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

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

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


            CoInitializeEx(NULL, COINIT_MULTITHREADED);

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

            bstrTemp = "Applications";

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

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

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

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

                        hr = pCatalogObjectApp->get_Name(&vTmp);
                        if (!SUCCEEDED(hr)) goto Error;

                        if (wcscmp(vTmp.bstrVal, L"TPC-C"))
                        {
                                    lCount--;
                                    continue;
                        }
                        else
                        {
                                    hr = pCatalogCollectionApp-
>Remove(lCount - 1);
                                    if (!SUCCEEDED(hr)) goto Error;
                                    break;
                        }
            }

            hr = pCatalogCollectionApp->SaveChanges(&lActProp);
            if (!SUCCEEDED(hr)) goto Error;

            // add the new application
            hr = pCatalogCollectionApp->Add((IDispatch**) &pCatalogObjectApp);
            if (!SUCCEEDED(hr)) goto Error;

            // set properties
            bstrTemp = "Name";
            vTmp = "TPC-C";
            hr = pCatalogObjectApp->put_Value(bstrTemp, vTmp);
            if (!SUCCEEDED(hr)) goto Error;

            // set as a library (in process) application
            bstrTemp = "Activation";
```

```
            lActProp = COMAdminActivationInproc;
            vTmp = lActProp;
            hr = pCatalogObjectApp->put_Value(bstrTemp, vTmp);
            if (!SUCCEEDED(hr)) goto Error;

            // set security level to process
            bstrTemp = "AccessChecksLevel";
            lActProp = COMAdminAccessChecksApplicationLevel;
            vTmp = lActProp;
            hr = pCatalogObjectApp->put_Value(bstrTemp, vTmp);
            if (!SUCCEEDED(hr)) goto Error;

            // save key to get the Components collection later
            hr = pCatalogObjectApp->get_Key(&vKey);
            if (!SUCCEEDED(hr)) goto Error;

            // save changes (app creation) so component installation will work
            hr = pCatalogCollectionApp->SaveChanges(&lActProp);
            if (!SUCCEEDED(hr)) goto Error;

            pCatalogObjectApp->Release();
            pCatalogObjectApp = NULL;

            bstrTemp  = "TPC-C";
            // app name
            bstrTemp2 =  bstrDllPath + "tpcc_com_all.dll";
            // DLL
            bstrTemp3 =  bstrDllPath + "tpcc_com_all.tlb";
            // type library (TLB)
            bstrTemp4 =  bstrDllPath + "tpcc_com_ps.dll";
            // proxy/stub dll

            hr = pCOMAdminCat->InstallComponent(bstrTemp,
                                                bstrTemp2,
                                                bstrTemp3,
                                                bstrTemp4);
            if (!SUCCEEDED(hr)) goto Error;


            bstrTemp = "Components";
            hr = pCatalogCollectionApp->GetCollection(bstrTemp, vKey,
(IDispatch**) &pCatalogCollectionCo);
            if (!SUCCEEDED(hr)) goto Error;

            hr = pCatalogCollectionCo->Populate();
            if (!SUCCEEDED(hr)) goto Error;

            hr = pCatalogCollectionCo->get_Count(&lCountCo);
            if (!SUCCEEDED(hr)) goto Error;

            // iterate through components in application and set the
properties
            while (lCountCo > 0)
            {
                        hr = pCatalogCollectionCo->get_Item(lCountCo - 1,
(IDispatch**) &pCatalogObjectCo);
                        if (!SUCCEEDED(hr)) goto Error;

                        // used for debugging (view the name)
                        hr = pCatalogObjectCo->get_Name(&vTmp);
                        if (!SUCCEEDED(hr)) goto Error;

                        bstrTemp = "ConstructionEnabled";
                        bTmp = TRUE;
                        vTmp = bTmp;
                        hr = pCatalogObjectCo->put_Value(bstrTemp, vTmp);
                        if (!SUCCEEDED(hr)) goto Error;

                        bstrTemp = "ConstructorString";
                        bstrTemp2 = "dummy string (do not remove)";
                        vTmp = bstrTemp2;
                        hr = pCatalogObjectCo->put_Value(bstrTemp, vTmp);
                        if (!SUCCEEDED(hr)) goto Error;

                        bstrTemp = "JustInTimeActivation";
                        bTmp = TRUE;
                        vTmp = bTmp;
                        hr = pCatalogObjectCo->put_Value(bstrTemp, vTmp);
                        if (!SUCCEEDED(hr)) goto Error;

                        bstrTemp = "MaxPoolSize";
                        vTmp.Clear();// clear variant so it isn't stored as a
bool (_variant_t feature)
                        vTmp = (long)30;
                        hr = pCatalogObjectCo->put_Value(bstrTemp, vTmp);
                        if (!SUCCEEDED(hr)) goto Error;

                        bstrTemp = "ObjectPoolingEnabled";
                        bTmp = TRUE;
                        vTmp = bTmp;
                        hr = pCatalogObjectCo->put_Value(bstrTemp, vTmp);
                        if (!SUCCEEDED(hr)) goto Error;



                        // save key to get the InterfacesForComponent
collection
                        hr = pCatalogObjectCo->get_Key(&vKey);
                        if (!SUCCEEDED(hr)) goto Error;

                        bstrTemp = "InterfacesForComponent";
                        hr = pCatalogCollectionCo->GetCollection(bstrTemp,
vKey, (IDispatch**) &pCatalogCollectionItf);
                        if (!SUCCEEDED(hr)) goto Error;

                        hr = pCatalogCollectionItf->Populate();
                        if (!SUCCEEDED(hr)) goto Error;

                        hr = pCatalogCollectionItf->get_Count(&lCountItf);
                        if (!SUCCEEDED(hr)) goto Error;

                        // iterate through interfaces in component
                        while (lCountItf > 0)
                        {
                                    hr = pCatalogCollectionItf-
>get_Item(lCountItf - 1, (IDispatch**) &pCatalogObjectItf);
                                    if (!SUCCEEDED(hr)) goto Error;

                                    // save key to get the
MethodsForInterface collection
                                    hr = pCatalogObjectItf->get_Key(&vKey);
                                    if (!SUCCEEDED(hr)) goto Error;

                                    bstrTemp = "MethodsForInterface";
                                    hr = pCatalogCollectionItf-
>GetCollection(bstrTemp, vKey, (IDispatch**) &pCatalogCollectionMethod);
                                    if (!SUCCEEDED(hr)) goto Error;

                                    hr = pCatalogCollectionMethod-
>Populate();
                                    if (!SUCCEEDED(hr)) goto Error;

                                    hr = pCatalogCollectionMethod-
>get_Count(&lCountMethod);
                                    if (!SUCCEEDED(hr)) goto Error;

                                    // iterate through methods of interface
                                    while (lCountMethod > 0)
                                    {
                                                hr =
pCatalogCollectionMethod->get_Item(lCountMethod - 1, (IDispatch**)
&pCatalogObjectMethod);
                                                if (!SUCCEEDED(hr)) goto
Error;

                                                bstrTemp = "AutoComplete";
                                                bTmp = TRUE;
                                                vTmp = bTmp;
                                                hr = pCatalogObjectMethod-
>put_Value(bstrTemp, vTmp);
                                                if (!SUCCEEDED(hr)) goto
Error;

                                                pCatalogObjectMethod-
>Release();
                                                pCatalogObjectMethod =
NULL;

                                                lCountMethod--;
                                    }

                                    // save changes
                                    hr = pCatalogCollectionMethod-
>SaveChanges(&lActProp);
                                    if (!SUCCEEDED(hr)) goto Error;

                                    pCatalogObjectItf->Release();
                                    pCatalogObjectItf = NULL;

                                    lCountItf--;

                        }


                        pCatalogObjectCo->Release();
                        pCatalogObjectCo = NULL;

                        lCountCo--;
            }


            // save changes
            hr = pCatalogCollectionCo->SaveChanges(&lActProp);
            if (!SUCCEEDED(hr)) goto Error;

            pCatalogCollectionApp->Release();
            pCatalogCollectionApp = NULL;

            pCatalogCollectionCo->Release();
            pCatalogCollectionCo = NULL;

            pCatalogCollectionItf->Release();
            pCatalogCollectionItf = NULL;

            pCatalogCollectionMethod->Release();
            pCatalogCollectionMethod = NULL;


Error:
            CoUninitialize();

            if (!SUCCEEDED(hr))
            {
                        LPTSTR lpBuf;
                        DWORD dwRes =
FormatMessage(FORMAT_MESSAGE_ALLOCATE_BUFFER | FORMAT_MESSAGE_FROM_SYSTEM,

                                    NULL,

                                    hr,

                                    MAKELANGID(LANG_NEUTRAL,
SUBLANG_DEFAULT),

                                    (LPTSTR) &lpBuf,

                                    0,

                                    NULL);
//                      _tprintf(__T("Error adding components.  HRESULT:
0x%x\n%s"), hr, lpBuf);
                        return TRUE;
            }
            else
                        return FALSE;
}
```

install/src/RESOURCE.H

```
//{{NO_DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by install.rc
//
#define IDD_DIALOG1                     101
#define IDI_ICON1                       102
#define IDR_TPCCDLL                     103
#define IDD_DIALOG2                     105
#define IDI_ICON2                       106
#define IDR_DELIVERY                    107
#define IDD_DIALOG3                     108
#define IDR_LICENSE1                    112
#define IDD_DIALOG4                     113
#define IDR_TPCCOBJ1                    117
#define IDR_TPCCSTUB1                   118
#define IDR_DBLIB_DLL                   122
#define IDR_ODBC_DLL                    123
#define IDR_TUXEDO_APP                  124
#define IDR_TUXEDO_DLL                  125
#define IDR_COM_DLL                     126
#define IDR_COMPS_DLL                   127
#define IDR_COMALL_DLL                  128
#define IDR_COMTYPLIB_DLL               129
#define BN_LOG                          1001
#define ED_KEEP                         1002
#define ED_THREADS                      1003
#define ED_THREADS2                     1004
#define IDC_PATH                        1007
#define IDC_VERSION                     1009
#define IDC_RESULTS                     1010
#define IDC_PROGRESS1                   1011
#define IDC_STATUS                      1012
#define IDC_BUTTON1                     1013
#define ED_MAXCONNECTION                1014
#define ED_IIS_MAX_THEAD_POOL_LIMIT     1015
#define ED_MAXDELIVERIES                1016
#define ED_WEB_SERVICE_BACKLOG_QUEUE_SIZE 1017
#define ED_IIS_THREAD_TIMEOUT           1018
#define ED_IIS_LISTEN_BACKLOG           1019
#define IDC_DBLIB                       1021
#define IDC_LICENSE                     1022
#define IDC_ODBC                        1022
#define IDC_CONNECT_POOL                1023
#define ED_DB_SERVER                    1023
#define ED_USER_CONNECT_DELAY_TIME      1024
#define ED_DB_USER_ID                   1024
#define IDC_MTS                         1025
#define IDC_TM_MTS                      1025
#define IDC_TM_TUXEDO                   1026
#define IDC_TM_NONE                     1027
#define ED_DB_PASSWORD                  1028
#define ED_DB_NAME                      1029
#define IDC_TM_ENCINA                   1030

// Next default values for new objects
//
#ifdef APSTUDIO_INVOKED
#ifndef APSTUDIO_READONLY_SYMBOLS
#define _APS_NEXT_RESOURCE_VALUE        130
#define _APS_NEXT_COMMAND_VALUE         40001
#define _APS_NEXT_CONTROL_VALUE         1031
#define _APS_NEXT_SYMED_VALUE           101
#endif
#endif
```

isapi_dll/isapi_dll.dsp

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

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

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

# Begin Project
# PROP AllowPerConfigDependencies 0
```

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

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

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

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
# ADD
LINK32 ..\common\txnlog\lib\release\rtetime.lib ..\common\txnlog\lib\release\spi
nlock.lib ..\common\txnlog\lib\release\error.lib

..\common\txnlog\lib\release\txnlog.lib wsock32.lib kernel32.lib user32.lib
gdi32.lib winspool.lib comdlg32.lib advapi32.lib shell32.lib

ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib /nologo
/subsystem:windows /dll /machine:I386 /nodefaultlib:"LIBCMT"

/out:".\bin/tpcc.dll"
# SUBTRACT LINK32 /nodefaultlib

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

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

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/pdbtype:sept
# ADD
LINK32 ..\common\txnlog\lib\debug\rtetime.lib ..\common\txnlog\lib\debug\spinloc
k.lib ..\common\txnlog\lib\debug\error.lib

..\common\txnlog\lib\debug\txnlog.lib wsock32.lib kernel32.lib user32.lib
gdi32.lib winspool.lib comdlg32.lib advapi32.lib shell32.lib

ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib /nologo
/subsystem:windows /dll /debug /machine:I386 /nodefaultlib:"LIBCMTD"

/out:".\bin/tpcc.dll" /pdbtype:sept
# SUBTRACT LINK32 /profile /pdb:none /nodefaultlib

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "isapi_dll"
# PROP BASE Intermediate_Dir "isapi_dll"
# PROP BASE Ignore_Export_Lib 0
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ".\bin"
# PROP Intermediate_Dir ".\obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MDd /W3 /GX /Zi /Od /D "_DEBUG" /D "WIN32" /D "_WINDOWS"
/FR /YX /FD /Gh /c
# ADD CPP /nologo /MD /W3 /GX /Zi /O2 /D "NDEBUG" /D "ICECAP" /D "WIN32" /D
"_WINDOWS" /FR /YX /FD /Gh /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib
odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/pdbtype:sept
# ADD LINK32 icap.lib ..\common\txnlog\lib\release\rtetime.lib ..\common\txnlog\lib\release\s
pinlock.lib ..\common\txnlog\lib\release\error.lib

..\common\txnlog\lib\release\txnlog.lib wsock32.lib kernel32.lib user32.lib
gdi32.lib winspool.lib comdlg32.lib advapi32.lib shell32.lib

ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib /nologo
/subsystem:windows /dll /debug /machine:I386 /out:".\bin/tpcc.dll"

/pdbtype:sept
# SUBTRACT LINK32 /profile /pdb:none /map

!ENDIF

# Begin Target

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

# PROP Default_Filter "*.cpp, *.def, *.rc"
# Begin Source File

SOURCE=.\src\tpcc.cpp
# End Source File
# Begin Source File

SOURCE=.\src\tpcc.def
# End Source File
# Begin Source File

SOURCE=.\src\tpcc.rc
# End Source File
# End Group
# Begin Group "Header Files"

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

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

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

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

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

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

SOURCE=..\tm_tuxedo_dll\src\tpcc_tux.h
# End Source File
# Begin Source File

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

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

isapi_dll/src/resource.h

```
//{{NO_DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by tpcc.rc
//
#define IDD_DIALOG1                     101

// Next default values for new objects
//
#ifdef APSTUDIO_INVOKED
#ifndef APSTUDIO_READONLY_SYMBOLS
#define _APS_NEXT_RESOURCE_VALUE        102
#define _APS_NEXT_COMMAND_VALUE         40001
#define _APS_NEXT_CONTROL_VALUE         1000
#define _APS_NEXT_SYMED_VALUE           101
#endif
#endif
```

isapi_dll/src/tpcc.cpp

```
/*            FILE:                         TPCC.C
 *                                                          Microsoft TPC-C Kit Ver.
4.20.000
 *                                                          Copyright Microsoft, 1999
 *               All Rights Reserved
 *
 *                                                          Version 4.10.000 audited
by Richard Gimarc, Performance Metrics, 3/17/99
 *
 *            PURPOSE:      Main module for TPCC.DLL which is an ISAPI service
dll.
 *            Contact:      Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                          4.20.000 - reworked error handling; added options for
COM and Encina txn monitors
 */

#include <windows.h>
#include <process.h>
#include <tchar.h>
#include <stdio.h>
#include <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_COMPUTERNAME_LENGTH+1];

//Terminal client id structure
TERM          Term = { 0, 0, 0, NULL };

// The WEBCLIENT_VERSION string specifies the version level of this web client
interface.
// The RTE must be synchronized with the interface level on login, otherwise the
login
// will fail.  This is a sanity check to catch problems resulting from
mismatched versions
// of the RTE and web client.
#define WEBCLIENT_VERSION "410"

static        CRITICAL_SECTION                        TermCriticalSection;

static  HINSTANCE hLibInstanceTm = NULL;
static  HINSTANCE hLibInstanceDb = NULL;

TYPE_CTPCC_DBLIB            *pCTPCC_DBLIB_new;
TYPE_CTPCC_ODBC                         *pCTPCC_ODBC_new;
TYPE_CTPCC_TUXEDO           *pCTPCC_TUXEDO_new;
TYPE_CTPCC_ENCINA    *pCTPCC_ENCINA_new;
TYPE_CTPCC_ENCINA    *pCTPCC_ENCINA_post_init;
TYPE_CTPCC_COM                          *pCTPCC_COM_new;

// For deferred Delivery txns:

CTxnLog                                                                 *txnDelilog =
NULL;                                   //used to log delivery transaction
information

HANDLE
            hWorkerSemaphore            = INVALID_HANDLE_VALUE;
```

```
HANDLE                                                          hDoneEvent
                = INVALID_HANDLE_VALUE;
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

#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(szMyComputerName, &dwSize);

        szMyComputerName[dwSize] = 0;
                                                }


        DisableThreadLibraryCalls((HMODULE)hModule);

        InitializeCriticalSection(&TermCriticalSection);

                                                if
( ReadTPCCRegistrySettings( &Reg ) )
                                                        throw new
CWEBCLNT_ERR( ERR_MISSING_REGISTRY_ENTRIES );

                                                dwDelBuffSize =
min( Reg.dwMaxPendingDeliveries, 10000 );  // min with 10000 as a sanity
constraint
                                                dwNumDeliveryThreads =
min( Reg.dwNumberOfDeliveryThreads, 100 );  // min with 100 as a sanity
constraint

                                                TermInit();

                                                // load DLL for txn
monitor
                                                if (Reg.eTxnMon == TUXEDO)
                                                {

        strcpy( szDllName, Reg.szPath );

        strcat( szDllName, "tpcc_tuxedo.dll");

        hLibInstanceTm = LoadLibrary( szDllName );
                                                        if
(hLibInstanceTm == NULL)

        throw new CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName,
GetLastError() );

                                                        // get
function pointer to wrapper for class constructor

        pCTPCC_TUXEDO_new = (TYPE_CTPCC_TUXEDO*)
GetProcAddress(hLibInstanceTm,"CTPCC_TUXEDO_new");
                                                        if
(pCTPCC_TUXEDO_new == NULL)

        throw new CWEBCLNT_ERR( ERR_GETPROCADDR_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_ENCINA_new");

        pCTPCC_ENCINA_post_init = (TYPE_CTPCC_ENCINA*)
GetProcAddress(hLibInstanceTm,"CTPCC_ENCINA_post_init");
                                                        if
(pCTPCC_ENCINA_new == NULL)

        throw new CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName,
GetLastError() );
                                                }
                                                else if (Reg.eTxnMon ==
COM)
                                                {

        strcpy( szDllName, Reg.szPath );

        strcat( szDllName, "tpcc_com.dll");

        hLibInstanceTm = LoadLibrary( szDllName );
                                                        if
(hLibInstanceTm == NULL)

        throw new CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName,
GetLastError() );
                                                        // get
function pointer to wrapper for class constructor

        pCTPCC_COM_new = (TYPE_CTPCC_COM*)
GetProcAddress(hLibInstanceTm,"CTPCC_COM_new");
                                                        if
(pCTPCC_COM_new == NULL)

        throw new CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName,
GetLastError() );
                                                }

                                                // load DLL for database
connection
                                                if ((Reg.eTxnMon == None)
|| (dwNumDeliveryThreads > 0))
                                                {
                                                        if
(Reg.eDB_Protocol == DBLIB)
                                                        {

        strcpy( szDllName, Reg.szPath );

        strcat( szDllName, "tpcc_dblib.dll");

        hLibInstanceDb = LoadLibrary( szDllName );

        if (hLibInstanceDb == NULL)

        throw new CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName,
GetLastError() );


        // get function pointer to wrapper for class constructor

        pCTPCC_DBLIB_new = (TYPE_CTPCC_DBLIB*)
GetProcAddress(hLibInstanceDb,"CTPCC_DBLIB_new");

        if (pCTPCC_DBLIB_new == NULL)

        throw new CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName,
GetLastError() );
                                                        }
                                                        else if
(Reg.eDB_Protocol == ODBC)
                                                        {


        strcpy( szDllName, Reg.szPath );

        strcat( szDllName, "tpcc_odbc.dll");

        hLibInstanceDb = LoadLibrary( szDllName );

        if (hLibInstanceDb == NULL)

        throw new CWEBCLNT_ERR( ERR_LOADDLL_FAILED, szDllName,
GetLastError() );


        // get function pointer to wrapper for class constructor

        pCTPCC_ODBC_new = (TYPE_CTPCC_ODBC*)
GetProcAddress(hLibInstanceDb,"CTPCC_ODBC_new");

        if (pCTPCC_ODBC_new == NULL)

        throw new CWEBCLNT_ERR( ERR_GETPROCADDR_FAILED, szDllName,
GetLastError() );
                                                        }
                                                }

                                                if (dwNumDeliveryThreads)
                                                {
                                                        // for
deferred delivery txns:
                                                        hDoneEvent =
CreateEvent( NULL, TRUE /* manual reset */, FALSE /* initially not signalled */,
NULL );

        InitializeCriticalSection(&DelBuffCriticalSection);

        hWorkerSemaphore = CreateSemaphore( NULL, 0, dwDelBuffSize,
NULL );

        dwDelBuffFreeCount = dwDelBuffSize;


        InitJulianTime(NULL);

                                                        // create
unique log file name based on delilog-yymmdd-hhmm.log
                                                        SYSTEMTIME
Time;

        GetLocalTime( &Time );

        wsprintf( szLogFile, "%sdelivery-%2.2d%2.2d%2.2d-%2.2d%2.2d.log",

         Reg.szPath, Time.wYear % 100, Time.wMonth, Time.wDay, Time.wHour,
Time.wMinute );
                                                        txnDelilog =
new CTxnLog(szLogFile, TXN_LOG_WRITE);

                                                        //write event
into txn log for START
                                                        txnDelilog-
>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(&DelBuffCriticalSection);
                                                }


        DeleteCriticalSection(&TermCriticalSection);

                                                if (hLibInstanceTm !=
NULL)
```

```
            FreeLibrary( hLibInstanceTm );
                                                hLibInstanceTm = NULL;

                                                if (hLibInstanceDb !=
NULL)
            FreeLibrary( hLibInstanceDb );
                                                hLibInstanceDb = NULL;

                                                Sleep(500);
                                                break;

                                    default:
                                                /* nothing */;
                        }
            }
            catch (CBaseErr *e)
            {
                        WriteMessageToEventLog( e->ErrorText() );
                        delete e;
                        TerminateExtension(0);
                        return FALSE;
            }
            catch (...)
            {
                        WriteMessageToEventLog(TEXT("Unhandled exception.
DLL could not load."));
                        TerminateExtension(0);
                        return FALSE;
            }

            return TRUE;
}


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

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

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

            return TRUE;
}

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

BOOL WINAPI TerminateExtension( DWORD dwFlags )
{
            if (pDeliHandles)
            {
                        SetEvent( hDoneEvent );
                        for(DWORD i=0; i<dwNumDeliveryThreads; i++)
                                    WaitForSingleObject( pDeliHandles[i],
INFINITE );
            }

            TermDeleteAll();
            return TRUE;
}


/* FUNCTION: HttpExtensionProc
 *
 * PURPOSE:  This function is the main entry point for the TPCC DLL. The
internet service
 *                                    calls this function passing in the http
string.
 *
 * ARGUMENTS: EXTENSION_CONTROL_BLOCK    *pECB         structure pointer to
passed in internet
 *
            service information.
 *
 * RETURNS:                DWORD        HSE_STATUS_SUCCESS
                                    connection can be dropped if error
 *
            HSE_STATUS_SUCCESS_AND_KEEP_CONN        keep connect valid comment
sent
 *
 * COMMENTS:  None
 *
 */

DWORD WINAPI HttpExtensionProc(EXTENSION_CONTROL_BLOCK *pECB)
{
            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
#endif
            StartCAP();

            try
            {
                        //process http query
                        ProcessQueryString(pECB, &iCmd, &FormId, &TermId,
&iSyncId);

                        if (TermId != 0)
                        {
                                    if ( TermId < 0 || TermId >=
Term.iNumEntries || Term.pClientData[TermId].iNextFree != -1 )
                                    {
                                                // debugging...
                                                char szTmp[128];
                                                wsprintf( szTmp, "Invalid
term ID; TermId = %d", TermId );

            WriteMessageToEventLog( szTmp );

                                                throw new
CWEBCLNT_ERR( ERR_INVALID_TERMID );
                                    }

                                    //must have a valid syncid here since
termid is valid
                                    if (iSyncId !=
Term.pClientData[TermId].iSyncId)
                                                throw new
CWEBCLNT_ERR( ERR_INVALID_SYNC_CONNECTION );

                                    //set use time
                                    Term.pClientData[TermId].iTickCount =
GetTickCount();
                        }

                        switch(iCmd)
                        {
                        case 0:
                                    WelcomeForm(pECB, szBuffer);
                                    break;
                        case 1:
                                    switch( FormId )
                                    {
                                                case WELCOME_FORM:
                                                case MAIN_MENU_FORM:
                                                            break;
                                                case NEW_ORDER_FORM:

            ProcessNewOrderForm(pECB, TermId, szBuffer);
                                                            break;
                                                case PAYMENT_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)
                                    pTxn = pCTPCC_ODBC_new( Reg.szDbServer,
Reg.szDbUser, Reg.szDbPassword, szMyComputerName, Reg.szDbName );
                        else if (Reg.eDB_Protocol == DBLIB)
                                    pTxn = pCTPCC_DBLIB_new( Reg.szDbServer,
Reg.szDbUser, Reg.szDbPassword, szMyComputerName, Reg.szDbName );
                        pDeliveryData = pTxn->BuffAddr_Delivery();
            }
            catch (CBaseErr *e)
            {
                        char szTmp[1024];
                        wsprintf( szTmp, "Error in Delivery Txn thread.
Could not connect to database.  "
                                                "%s.  Server=%s, User=%s,
Password=%s, Database=%s",
                                                e->ErrorText(),
Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword, Reg.szDbName );
                        WriteMessageToEventLog( szTmp );
                        delete e;
                        goto ErrorExit;
            }
            catch (...)
            {
                        WriteMessageToEventLog(TEXT("Unhandled exception
caught in DeliveryWorkerThread."));
                        goto ErrorExit;
            }

            while (TRUE)
            {
                        try
                        {
                                    //while delivery thread running, i.e.
user has not requested termination
                                    while (TRUE)
                                    {
                                                // need to wait for
multiple objects: program exit or worker semaphore;
                                                handles[0] = hDoneEvent;
                                                handles[1] =
hworkerSemaphore;
                                                index =
WaitForMultipleObjects( 2, &handles[0], FALSE, INFINITE );
                                                if (index ==
WAIT_OBJECT_0)
                                                            goto
ErrorExit;

                                                ZeroMemory(&txnDeliRec,
sizeof(txnDeliRec));
                                                txnDeliRec.TxnType =
TXN_REC_TYPE_TPCC_DELIV_DEF;
                                                // make a local copy of
current entry from delivery buffer and increment buffer index
            EnterCriticalSection(&DelBuffCriticalSection);
                                                delivery =
*(pDelBuff+dwDelBuffBusyIndex);
                                                dwDelBuffFreeCount++;
                                                dwDelBuffBusyIndex++;
                                                if (dwDelBuffBusyIndex ==
dwDelBuffSize)            // wrap-around if at end of buffer
            dwDelBuffBusyIndex = 0;

            LeaveCriticalSection(&DelBuffCriticalSection);
                                                pDeliveryData->w_id =
delivery.w_id;
                                                pDeliveryData-
>o_carrier_id = delivery.o_carrier_id;
                                                txnDeliRec.w_id =
pDeliveryData->w_id;
                                                txnDeliRec.o_carrier_id =
pDeliveryData->o_carrier_id;
                                                txnDeliRec.TxnStartTO =
Get64BitTime(&delivery.queue);

            GetLocalTime( &trans_start );
                                                pTxn->Delivery();

            GetLocalTime( &trans_end );

                                                //log txn
                                                txnDeliRec.TxnStatus =
ERR_SUCCESS;
                                                for (int i=0; i<10; i++)
            txnDeliRec.o_id[i] = pDeliveryData->o_id[i];
                                                txnDeliRec.DeltaT4 =
(int)(Get64BitTime(&trans_end) - txnDeliRec.TxnStartTO);
                                                txnDeliRec.DeltaTxnExec =
(int)(Get64BitTime(&trans_end) - Get64BitTime(&trans_start));

                                                if (txnDelilog != NULL)
                                                            txnDelilog-
>WriteToLog(&txnDeliRec);
                                    }
                                    catch (CBaseErr *e)
                                    {
                                                char szTmp[1024];
                                                wsprintf( szTmp, "Error in Delivery Txn
thread.  %s", e->ErrorText() );
                                                WriteMessageToEventLog( szTmp );

                                                // log the error txn
                                                txnDeliRec.TxnStatus = e->ErrorType();
                                                if (txnDelilog != NULL)
                                                            txnDelilog-
>WriteToLog(&txnDeliRec);

                                                delete e;
                                    }
                                    catch (...)
                                    {
                                                // unhandled exception; shouldn't
happen; not much we can do...
                                                WriteMessageToEventLog(TEXT("Unhandled
exception caught in DeliveryWorkerThread."));
                                    }
            }

ErrorExit:
            delete pTxn;
            _endthread();
}

/* FUNCTION: PostDeliveryInfo
 *
 * PURPOSE:  This function enters the delivery txn into the deferred delivery
buffer.
 *
 * RETURNS:                BOOL          FALSE         delivery information
posted successfully
 *
            TRUE          error cannot post delivery info
 */

BOOL PostDeliveryInfo(short w_id, short o_carrier_id)
{
            BOOL bError;

            EnterCriticalSection(&DelBuffCriticalSection);
            if (dwDelBuffFreeCount > 0)
            {
                        bError = FALSE;
                        (pDelBuff+dwDelBuffFreeIndex)->w_id
= w_id;
                        (pDelBuff+dwDelBuffFreeIndex)->o_carrier_id
= o_carrier_id;
                        GetLocalTime(&(pDelBuff+dwDelBuffFreeIndex)->queue);

                        dwDelBuffFreeCount--;
                        dwDelBuffFreeIndex++;
                        if (dwDelBuffFreeIndex == dwDelBuffSize)
                                    dwDelBuffFreeIndex = 0;
            // wrap-around if at end of buffer
            }
            else
                        // No free buffers.  Return an error, which indicates
that the delivery buffer is full.
                        // Most likely, the number of delivery worker threads
needs to be increased to keep up
                        // with the txn rate.
                        bError = TRUE;
            LeaveCriticalSection(&DelBuffCriticalSection);

            if (!bError)
                        // increment worker semaphore to wake up a worker
thread
                        ReleaseSemaphore( hWorkerSemaphore, 1, NULL );

            return bError;
}

/* FUNCTION: ProcessQueryString
 *
 * PURPOSE:  This function extracts the relevent information out of the http
command passed in from
 *                                    the browser.
 *
 * COMMENTS: If this is the initial connection i.e. client is at welcome screen
then
 *                                    there will not be a
terminal id or current form id.  If this is the case
 *                                    then the pTermid and
pFormid return values are undefined.
 */

void ProcessQueryString(EXTENSION_CONTROL_BLOCK *pECB, int *pCmd, int *pFormId,
int *pTermId, int *pSyncId)
{
            char *ptr = pECB->lpszQueryString;
            char szBuffer[25];
            int i;

            //allowable client command strings i.e. CMD=command
            static char *szCmds[] =
            {
                        "Process", "..NewOrder..", "..Payment..",
"..Delivery..", "..Order-Status..", "..Stock-Level..",
                        "..Exit..", "Submit", "Menu", "Clear", "Stats", ""
            };

            *pCmd         = 0;                        // default is the login
screen
            *pTermId = 0;

            // if no params (i.e., empty query string), then return login
screen
            if (strlen(pECB->lpszQueryString) == 0)
                        return;

            // parse FORMID, TERMID, and SYNCID
            *pFormId = GetIntKeyValue(&ptr, "FORMID", NO_ERR, NO_ERR);
            *pTermId = GetIntKeyValue(&ptr, "TERMID", NO_ERR, NO_ERR);
            *pSyncId = GetIntKeyValue(&ptr, "SYNCID", NO_ERR, NO_ERR);

            // parse CMD
            GetKeyValue(&ptr, "CMD", szBuffer, sizeof(szBuffer),
ERR_COMMAND_UNDEFINED);

            // see which command it matches
            for(i=0; ; i++)
            {
                        if (szCmds[i][0] == 0)
                                    // no more; no match; return error
                                    throw new
CWEBCLNT_ERR( ERR_COMMAND_UNDEFINED );
                        if ( !strcmp(szCmds[i], 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=4><BR>"
                "District ID  = <INPUT NAME=\"d_id\" SIZE=2><BR>"
                "</PRE></font><HR>"
                "<INPUT TYPE=\"Submit\" NAME=\"CMD\" VALUE=\"Submit\">"
                "</FORM></BODY></HTML>");
}

/* FUNCTION: SubmitCmd
 *
 * PURPOSE:  This function allocated a new terminal id in the Term structure
array.
 *
 */

void SubmitCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer)
{
        int                     iNewTerm;
        char        *ptr = pECB->lpszQueryString;

        char        szVersion[32] = { 0 };
        char        szServer[32] = { 0 };
        char        szUser[32]                  = "sa";
        char        szPassword[32]              = { 0 };
        char        szDatabase[32]              = "tpcc";

        // validate version field; the version field ensures that the RTE
is synchronized with the web client
        GetKeyValue(&ptr, "VERSION", szVersion, sizeof(szVersion),
ERR_VERSION_MISMATCH);
        if ( strcmp( szVersion, WEBCLIENT_VERSION ) )
                throw new CWEBCLNT_ERR( ERR_VERSION_MISMATCH );

        if (Reg.eTxnMon == None)
        {
                // parse Server name
                GetKeyValue(&ptr, "db_server", szServer,
sizeof(szServer), ERR_NO_SERVER_SPECIFIED);
                // parse User name
                GetKeyValue(&ptr, "db_user", szUser, sizeof(szUser),
NO_ERR);
                // parse Password
                GetKeyValue(&ptr, "db_passwd", szPassword,
sizeof(szPassword), NO_ERR);
                // parse Database name
                GetKeyValue(&ptr, "db_name", szDatabase,
sizeof(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 );
                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(&TermCriticalSection);

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

        LeaveCriticalSection(&TermCriticalSection);

        wsprintf( szBuffer,
                        "<HTML><HEAD><TITLE>TPC-C Web Client
Stats</TITLE></HEAD>"
                        "<BODY><B><BIG> Total Active
Connections: %d </BIG></B><BR></BODY></HTML>"
                        , iTotal );
}

char *CWEBCLNT_ERR::ErrorText()
{
        static SERRORMSG errorMsgs[] =
        {
                {       ERR_COMMAND_UNDEFINED,
                        "Command undefined."


                },
                {       ERR_D_ID_INVALID,
                                "Invalid District ID Must
be 1 to 10."
                                                },
                {       ERR_DELIVERY_CARRIER_ID_RANGE,
                "Delivery Carrier ID out of range must be 1 - 10."


                },
                {       ERR_DELIVERY_CARRIER_INVALID,
                "Delivery Carrier ID invalid must be numeric 1 - 10."


                },
                {       ERR_DELIVERY_MISSING_OCD_KEY,
                "Delivery missing Carrier ID key \"OCD*\"."


                        },
                {       ERR_DELIVERY_THREAD_FAILED,
                        "Could not start delivery worker
thread."
                                                },
                {       ERR_GETPROCADDR_FAILED,
                        "Could not map proc in DLL.  GetProcAddr
error.  DLL="
                },
                {       ERR_HTML_ILL_FORMED,
                        "Required key field is missing from HTML
string."
                        },
                {       ERR_INVALID_SYNC_CONNECTION,
                "Invalid Terminal Sync ID."


                },
                {       ERR_INVALID_TERMID,             },
                                "Invalid Terminal ID."
        },
                {       ERR_LOADDLL_FAILED,
                                "Load of DLL failed.
DLL="

        },
                {       ERR_MAX_CONNECTIONS_EXCEEDED,
                "No connections available.  Max Connections is
probably too low."   },
                {       ERR_MISSING_REGISTRY_ENTRIES,
                "Required registry entries are missing.  Rerun
INSTALL to correct."
        },
                {       ERR_NEWORDER_CUSTOMER_INVALID,
                "New Order customer id invalid data type, range = 1
to 3000."
        },
                {       ERR_NEWORDER_CUSTOMER_KEY,
                "New Order missing Customer key \"CID*\"."

                                        },
                {       ERR_NEWORDER_DISTRICT_INVALID,
                "New Order District ID Invalid range 1 - 10."

                },
                {       ERR_NEWORDER_FORM_MISSING_DID,
                "New Order missing District key \"DID*\"."

                        },
                {       ERR_NEWORDER_ITEMID_INVALID,
                "New Order Item Id is wrong data type, must be
numeric."
        },
                {       ERR_NEWORDER_ITEMID_RANGE,
                "New Order Item Id is out of range. Range = 1 to
999999."
                },
                {       ERR_NEWORDER_ITEMID_WITHOUT_SUPPW,
        "New Order Item_Id field entered without a corresponding Supp_W."
},
                {       ERR_NEWORDER_MISSING_IID_KEY,
                "New Order missing Item Id key \"IID*\"."

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

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

                        },
                {       ERR_NEWORDER_NOITEMS_ENTERED,
                "New Order No order lines entered."

                                        },
                {       ERR_NEWORDER_QTY_INVALID,
                "New Order Qty invalid must be numeric range 1 - 99."

                },
                {       ERR_NEWORDER_QTY_RANGE,
                        "New Order Qty is out of range. Range =
1 to 99."
                        },
                {       ERR_NEWORDER_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_INVALID,
                    "Payment Customer data type invalid, must be
numeric."
          },
                    {           ERR_PAYMENT_CWI_INVALID,
                    "Payment Customer Warehouse invalid, must be
numeric."
                    },
                    {           ERR_PAYMENT_DISTRICT_INVALID,
                    "Payment District ID is invalid, must be 1 - 10."

                    },
                    {           ERR_PAYMENT_HAM_INVALID,
                    "Payment Amount invalid data type must be numeric."

                    },
                    {           ERR_PAYMENT_HAM_RANGE,
                    "Payment Amount out of range, 0 -
9999.99."
                              },
                    {           ERR_PAYMENT_LAST_NAME_TO_LONG,
                    "Payment Customer last name longer than 16
characters."
          },
                    {           ERR_PAYMENT_MISSING_CDI_KEY,
                    "Payment missing Customer district key \"CDI*\"."

                    },
                    {           ERR_PAYMENT_MISSING_CID_CLT,
                    "Payment Either Customer ID or Last Name must be
entered."
          },
                    {           ERR_PAYMENT_MISSING_CID_KEY,
                    "Payment missing Customer Key \"CID*\"."

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

                    },
                    {           ERR_PAYMENT_MISSING_CWI_KEY,
                    "Payment missing Customer Warehouse key \"CWI*\"."

                    },
                    {           ERR_PAYMENT_MISSING_DID_KEY,
                    "Payment missing District Key \"DID*\"."

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

                    },
                    {           ERR_STOCKLEVEL_MISSING_THRESHOLD_KEY,
          "Stock Level; missing Threshold key \"TT*\"."

          },
                    {           ERR_STOCKLEVEL_THRESHOLD_INVALID,
          "Stock Level; Threshold value must be in the range = 1 - 99."

},
                    {           ERR_STOCKLEVEL_THRESHOLD_RANGE,
                    "Stock Level Threshold out of range, range must be 1
- 99."
          },
                    {           ERR_VERSION_MISMATCH,
                              "Invalid version field.  RTE and Web
Client are probably out of

sync." },
                    {           ERR_W_ID_INVALID,
                                        "Invalid Warehouse ID."




          },
                    {           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
 *           *pKey                                   char
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(&TermCriticalSection);

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

          Term.pClientData          = NULL;
          Term.pClientData          = (PCLIENTDATA)malloc(Term.iNumEntries *
sizeof(CLIENTDATA));
          if (Term.pClientData == NULL)
          {
                    LeaveCriticalSection(&TermCriticalSection);
                    throw new CWEBCLNT_ERR( ERR_MEM_ALLOC_FAILED );
          }

          ZeroMemory( Term.pClientData, Term.iNumEntries *
sizeof(CLIENTDATA) );

          Term.iFreeList                    = Term.iNumEntries-1;
          // build free list
          // note: Term.pClientData[0].iNextFree gets set to -1, which marks
it as "in use".
```

```
		//	This is intentional, as the zero entry is used as an
anchor and never
		//				allocated as an actual terminal.
		for(int i=0; i<Term.iNumEntries; i++)
			Term.pClientData[i].iNextFree = i-1;

		LeaveCriticalSection(&TermCriticalSection);
}

/* FUNCTION: 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(&TermCriticalSection);

		for(int i=1; i<Term.iNumEntries; i++)
		{
			if (Term.pClientData[i].iNextFree == -1)
				delete Term.pClientData[i].pTxn;
		}

		Term.iFreeList				= 0;
		Term.iNumEntries		= 0;
		if ( Term.pClientData )
			free(Term.pClientData);
		Term.pClientData		= NULL;

		LeaveCriticalSection(&TermCriticalSection);
}

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

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

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

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

		LeaveCriticalSection(&TermCriticalSection);
				throw new
CWEBCLNT_ERR( ERR_MAX_CONNECTIONS_EXCEEDED );
			}
		}

		Term.pClientData[iNewTerm].iTickCount = GetTickCount();
		Term.pClientData[iNewTerm].iSyncId = Term.iMasterSyncId++;
		Term.pClientData[iNewTerm].pTxn = NULL;

		LeaveCriticalSection(&TermCriticalSection);
		return iNewTerm;
}

/* FUNCTION: TermDelete
 *
 * PURPOSE:  This function makes a terminal entry in the Term array available
for reuse.
 *
 * ARGUMENTS: int
		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(&TermCriticalSection);

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

			LeaveCriticalSection(&TermCriticalSection);
		}
}


/* FUNCTION: MakeErrorForm
 */

void ErrorForm(EXTENSION_CONTROL_BLOCK *pECB, int iType, int iErrorNum, int
iTermId, int iSyncId, char *szErrorText, char *szBuffer )
{
		wsprintf(szBuffer,
				"<HTML><HEAD><TITLE>TPC-C Error</TITLE></HEAD><BODY>"
				"<FORM ACTION=\"tpcc.dll\" METHOD=\"GET\">"
				"<INPUT TYPE=\"hidden\" NAME=\"STATUSID\"
VALUE=\"%d\">"
				"<INPUT TYPE=\"hidden\" NAME=\"ERROR\" VALUE=\"%d\">"
				"<INPUT TYPE=\"hidden\" NAME=\"FORMID\"
VALUE=\"%d\">"
				"<INPUT 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: %4.4d   District: %2.2d<BR> <BR>",
				STOCK_LEVEL_FORM, iTermId,
Term.pClientData[iTermId].iSyncId,
				Term.pClientData[iTermId].w_id,
Term.pClientData[iTermId].d_id);

		if ( bInput )
		{
			strcpy(szForm+c,
				"Stock Level Threshold: <INPUT
NAME=\"TT*\" SIZE=2><BR> <BR>"
				"low stock:    </font><BR> <BR> <BR>
<BR> <BR> <BR> <BR> <BR> <BR> <BR>"
				" <BR> <BR> <BR> <BR> <BR> <BR>
<BR></PRE><HR>"
				"<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"Process\">"
				"<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"Menu\">"
				"</FORM><HTML>" );
		}
		else
		{
			wsprintf(szForm+c,
				"Stock Level Threshold: %2.2d<BR> <BR>"
				"low stock: %3.3d</font> <BR> <BR> <BR>
<BR> <BR> <BR> <BR> <BR> <BR>"
				" <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR></PRE><HR>"
				"<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..NewOrder..\">"
				"<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Payment..\">"
				"<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Delivery..\">"
				"<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Order-Status..\">"
				"<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Stock-Level..\">"
				"<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Exit..\">"
				"</FORM></HTML>"
				, pStockLevelData->threshold,
pStockLevelData->low_stock);
		}
}

/* FUNCTION: MakeNewOrderForm
 *
 * COMMENTS:  The internal client 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>";

		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: %4.4d   ",
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=\"SPOO*\" 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: %4.4d
District: %2.2d                 Date: ",
                                pNewOrderData->w_id,
                                pNewOrderData->d_id);

                if ( bValid )
                {
                        c += wsprintf(szForm+c, "%2.2d-%2.2d-
%4.4d %2.2d:%2.2d:%2.2d",
                                        pNewOrderData-
>o_entry_d.day,
                                        pNewOrderData-
>o_entry_d.month,
                                        pNewOrderData-
>o_entry_d.year,
                                        pNewOrderData-
>o_entry_d.hour,
                                        pNewOrderData-
>o_entry_d.minute,
                                        pNewOrderData-
>o_entry_d.second);
                }

                c += wsprintf(szForm+c, "<BR>Customer:  %4.4d
Name: %-16s   Credit: %-2s  ",
                                pNewOrderData->c_id, pNewOrderData-
>c_last, pNewOrderData->c_credit);

                if ( bValid )
                {
                        c += sprintf(szForm+c,
            "%%Disc: %5.2f              <BR>"

            "Order Number: %8.8d  Number of Lines: %2.2d        W_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,
"  %4.4d   %6.6d   %-24s  %2.2d    %3.3d    %1.1s   $%6.2f  $%7.2f  <BR>",
                        pNewOrderData->OL[i].ol_supply_w_id,
                        pNewOrderData->OL[i].ol_i_id,
                        pNewOrderData->OL[i].ol_i_name,
                        pNewOrderData->OL[i].ol_quantity,
                        pNewOrderData->OL[i].ol_stock,
                        pNewOrderData->OL[i].ol_brand_generic,
                        pNewOrderData->OL[i].ol_i_price,
                        pNewOrderData->OL[i].ol_amount );
                                }
                        }
                        else
                        {
                                c += wsprintf(szForm+c,
                                                "%Disc:<BR>"
                                                "Order Number: %8.8d
Number of Lines:              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: %4.4d"
                                                "                 District:
<INPUT NAME=\"DID*\" SIZE=1><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: %4.4d
District: %2.2d<BR>"
                                                "%-20s                          %-20s<BR>"
                                                "%-20s                          %-20s<BR>"
                                                "%-20s %-2s %5.5s-%4.4s       %-20s %-
2s %5.5s-%4.4s<BR> <BR>"
                                                "Customer: %4.4d  Cust-Warehouse: %4.4d
Cust-District: %2.2d<BR>"
                                                "Name:   %-16s %-2s %-16s
Since:  %2.2d-%2.2d-%4.4d<BR>"
                                                "        %-20s
Credit: %-2s<BR>"
                                                , Term.pClientData[iTermId].w_id,
pPaymentData->d_id
                                                , pPaymentData->w_street_1,
pPaymentData->d_street_1
                                                , pPaymentData->w_street_2,
pPaymentData->d_street_2
                                                , pPaymentData->w_city, pPaymentData-
>w_state, 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: %4.4d   ",
                                ORDER_STATUS_FORM, iTermId,
Term.pClientData[iTermId].iSyncId, Term.pClientData[iTermId].w_id);

                if ( bInput )
                {
                                strcpy(szForm+c,
                                                "District: <INPUT NAME=\"DID*\"
SIZE=1><BR>"
                                                "Customer: <INPUT NAME=\"CID*\" SIZE=4>
Name:                           <INPUT NAME=\"CLT*\" SIZE=23><BR>"
                                                "Cust-Balance:<BR> <BR>"
                                                "Order-Number:              Entry-Date:
Carrier-Number:<BR>"
                                                "Supply-W      Item-Id    Qty      Amount
Delivery-Date<BR> <BR> <BR> <BR> <BR>"
                                                " <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR> <BR> <BR> <BR></font></PRE>"
                                                "<HR><INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"Process\"><INPUT TYPE=\"submit\" NAME=\"CMD\" VALUE=\"Menu\">"
                                                "</BODY></FORM></HTML>" );
                }
                else
                {
                                c += wsprintf(szForm+c,
                                                "District: %2.2d<BR>"
                                                "Customer: %4.4d   Name: %-16s %-2s %-
16s<BR>",
                                                pOrderStatusData->d_id,
pOrderStatusData->c_id,
                                                pOrderStatusData->c_first,
pOrderStatusData->c_middle, pOrderStatusData->c_last);

                                c += sprintf(szForm+c, "Cust-Balance: $%9.2f<BR>
<BR>",
                                                pOrderStatusData->c_balance);

                                c += wsprintf(szForm+c,
                                                "Order-Number: %8.8d   Entry-
Date: %2.2d-%2.2d-%4.4d %2.2d:%2.2d:%2.2d   Carrier-Number: %2.2d<BR>"
                                                "Supply-W      Item-Id    Qty      Amount
Delivery-Date<BR>",
                                                pOrderStatusData->o_id,
                                                pOrderStatusData->o_entry_d.day,
                                                pOrderStatusData->o_entry_d.month,
                                                pOrderStatusData->o_entry_d.year,
                                                pOrderStatusData->o_entry_d.hour,
                                                pOrderStatusData->o_entry_d.minute,
                                                pOrderStatusData->o_entry_d.second,
                                                pOrderStatusData->o_carrier_id);

                                for(i=0; i< pOrderStatusData->o_ol_cnt; i++)
                                {
                                                c += sprintf(szForm+c,
"  %4.4d       %6.6d      %2.2d      $%8.2f       %2.2d-%2.2d-%4.4d<BR>",
                                                pOrderStatusData-
>OL[i].ol_supply_w_id,
                                                pOrderStatusData-
>OL[i].ol_i_id,
                                                pOrderStatusData-
>OL[i].ol_quantity,
                                                pOrderStatusData-
>OL[i].ol_amount,
                                                pOrderStatusData-
>OL[i].ol_delivery_d.day,
                                                pOrderStatusData-
>OL[i].ol_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: %4.4d<BR> <BR>",
                                (!bInput && (pDeliveryData->exec_status_code !=
eOK)) ? ERR_TYPE_DELIVERY_POST : 0,
                                DELIVERY_FORM, iTermId,
Term.pClientData[iTermId].iSyncId, Term.pClientData[iTermId].w_id);

                if ( bInput )
                {
                                strcpy( szForm+c,
                                                "Carrier Number: <INPUT NAME=\"OCD*\"
SIZE=1><BR> <BR>"
                                                "Execution Status: <BR> <BR> <BR> <BR>
<BR> <BR> <BR> <BR>"
                                                " <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR> </font></PRE><HR>"
                                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"Process\">"
                                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"Menu\">"
                                                "</BODY></FORM></HTML>" );
                }
                else
                {
                                wsprintf( szForm+c,
                                                "Carrier Number: %2.2d<BR> <BR>"
                                                "Execution Status: %s <BR> <BR> <BR>
<BR> <BR> <BR> <BR> <BR>"
                                                " <BR> <BR> <BR> <BR> <BR> <BR> <BR>
<BR> </font></PRE>"
                                                "<HR><INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..NewOrder..\">"
                                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Payment..\">"
                                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Delivery..\">"
                                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Order-Status..\">"
                                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Stock-Level..\">"
                                                "<INPUT TYPE=\"submit\" NAME=\"CMD\"
VALUE=\"..Exit..\">"
                                                "</BODY></FORM></HTML>"

                                                , pDeliveryData->o_carrier_id,
                                                (pDeliveryData->exec_status_code ==
eOK) ? "Delivery has been queued." : "Delivery Post Failed      "
                                                );
                }
}

/* FUNCTION: ProcessNewOrderForm
 *
 * PURPOSE:  This function gets and validates the input data from the new order
form
 *                                      filling in the required input variables.
it then calls the SQLNewOrder
 *                                      transaction, constructs the output form
and writes it back to client
 *                                      browser.
 */

void ProcessNewOrderForm(EXTENSION_CONTROL_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_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
= (short)atoi(szTmp);

						ol_i_id = pNewOrderData-
>OL[items].ol_i_id =
								GetIntKeyValue(&ptr,
szIID[i], ERR_NEWORDER_MISSING_IID_KEY, ERR_NEWORDER_ITEMID_INVALID);
						if ( ol_i_id > 999999 || ol_i_id < 1 )
								throw new
CWEBCLNT_ERR( ERR_NEWORDER_ITEMID_RANGE );

						ol_quantity = pNewOrderData-
>OL[items].ol_quantity =
								GetIntKeyValue(&ptr,
szQty[i], ERR_NEWORDER_MISSING_QTY_KEY, ERR_NEWORDER_QTY_INVALID);
						if ( ol_quantity > 99 || ol_quantity <
1 )
								throw new
CWEBCLNT_ERR( ERR_NEWORDER_QTY_RANGE );

						items++;
				}
				else
				{		// nothing entered for supply warehouse,
so item id and qty must also be blank
						GetKeyValue(&ptr, szIID[i], szTmp,
sizeof(szTmp), ERR_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;

		pPaymentData->d_id = GetIntKeyValue(&ptr, "DID*",
ERR_PAYMENT_MISSING_DID_KEY, ERR_PAYMENT_DISTRICT_INVALID);

		GetKeyValue(&ptr, "CID*", szTmp, sizeof(szTmp),
ERR_PAYMENT_MISSING_CID_KEY);
		if ( szTmp[0] == 0 )
		{
				bCustIdBlank = TRUE;
				pPaymentData->c_id = 0;
		}
		else
		{		// parse customer id and verify that last name was
NOT entered
				bCustIdBlank = FALSE;
				if ( !IsNumeric(szTmp) )
						throw new
CWEBCLNT_ERR( ERR_PAYMENT_CUSTOMER_INVALID );
				pPaymentData->c_id = atoi(szTmp);
		}

		pPaymentData->c_w_id = GetIntKeyValue(&ptr, "CWI*",
ERR_PAYMENT_MISSING_CWI_KEY, ERR_PAYMENT_CWI_INVALID);
		pPaymentData->c_d_id = GetIntKeyValue(&ptr, "CDI*",
ERR_PAYMENT_MISSING_CDI_KEY, ERR_PAYMENT_CDI_INVALID);

		if ( bCustIdBlank )
		{		// customer id is blank, so last name must be entered
				GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR_PAYMENT_MISSING_CLT_KEY);
				if ( szTmp[0] == 0 )
						throw new
CWEBCLNT_ERR( ERR_PAYMENT_MISSING_CID_CLT );

				_strupr( szTmp );
				if ( strlen(pPaymentData->c_last) > LAST_NAME_LEN )
						throw new
CWEBCLNT_ERR( ERR_PAYMENT_LAST_NAME_TO_LONG );
				strcpy(pPaymentData->c_last, szTmp);
		}
		else
		{		// parse customer id and verify that last name was
NOT entered
				GetKeyValue(&ptr, "CLT*", 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;

		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(pOrderStatusData->c_last) >
LAST_NAME_LEN )
						throw new
CWEBCLNT_ERR( ERR_ORDERSTATUS_CLT_RANGE );
				strcpy(pOrderStatusData->c_last, szTmp);
		}
		else
		{		// parse customer id and verify that last name was
NOT entered
				if ( !IsNumeric(szTmp) )
						throw new
CWEBCLNT_ERR( ERR_ORDERSTATUS_CID_INVALID );
				pOrderStatusData->c_id = atoi(szTmp);
				GetKeyValue(&ptr, "CLT*", szTmp, sizeof(szTmp),
ERR_ORDERSTATUS_MISSING_CLT_KEY);
				if ( szTmp[0] != 0 )
						throw new
CWEBCLNT_ERR( ERR_ORDERSTATUS_CID_AND_CLT );
		}

}

/* FUNCTION: BOOL IsNumeric(char *ptr)
 *
 * PURPOSE:  This function determines if a string is numeric. It fails if any
characters other
 *                                      than numeric and null terminator are
present.
 *
 * ARGUMENTS: char                                 *ptr          pointer to
string to check.
 *
 * RETURNS:		BOOL		FALSE		if string is not 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/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;
	int		//syncronization id
	int				iTickCount;
		//time of last access;

	CTPCC_BASE	*pTxn;

} CLIENTDATA, *PCLIENTDATA;


//This structure is used to define the operational interface for terminal id support
typedef struct _TERM
{
	int				iNumEntries;
		//total allocated terminal array entries
	int				iFreeList;
		//next available terminal array element or -1 if none
	int				iMasterSyncId;
		//syncronization id

	CLIENTDATA	*pClientData;
	//pointer to allocated client data
} TERM;

typedef TERM *PTERM;
		//pointer to terminal structure type


	enum WEBERROR
	{
		NO_ERR,
		ERR_COMMAND_UNDEFINED,
		ERR_D_ID_INVALID,
		ERR_DELIVERY_CARRIER_ID_RANGE,
		ERR_DELIVERY_CARRIER_INVALID,
		ERR_DELIVERY_MISSING_OCD_KEY,
		ERR_DELIVERY_THREAD_FAILED,
		ERR_GETPROCADDR_FAILED,
		ERR_HTML_ILL_FORMED,
		ERR_INVALID_SYNC_CONNECTION,
		ERR_INVALID_TERMID,
		ERR_LOADDLL_FAILED,
		ERR_MAX_CONNECTIONS_EXCEEDED,
		ERR_MEM_ALLOC_FAILED,
		ERR_MISSING_REGISTRY_ENTRIES,
		ERR_NEWORDER_CUSTOMER_INVALID,
		ERR_NEWORDER_CUSTOMER_KEY,
		ERR_NEWORDER_DISTRICT_INVALID,
		ERR_NEWORDER_FORM_MISSING_DID,
		ERR_NEWORDER_ITEMID_INVALID,
		ERR_NEWORDER_ITEMID_RANGE,
		ERR_NEWORDER_ITEMID_WITHOUT_SUPPW,
		ERR_NEWORDER_MISSING_TID_KEY,
		ERR_NEWORDER_MISSING_QTY_KEY,
		ERR_NEWORDER_MISSING_SUPPW_KEY,
		ERR_NEWORDER_NOITEMS_ENTERED,
		ERR_NEWORDER_QTY_INVALID,
		ERR_NEWORDER_QTY_RANGE,
		ERR_NEWORDER_QTY_WITHOUT_SUPPW,
		ERR_NEWORDER_SUPPW_INVALID,
		ERR_NO_SERVER_SPECIFIED,
		ERR_ORDERSTATUS_CID_AND_CLT,
		ERR_ORDERSTATUS_CID_INVALID,
		ERR_ORDERSTATUS_CLT_RANGE,
		ERR_ORDERSTATUS_DID_INVALID,
		ERR_ORDERSTATUS_MISSING_CID_CLT,
		ERR_ORDERSTATUS_MISSING_CID_KEY,
		ERR_ORDERSTATUS_MISSING_CLT_KEY,
		ERR_ORDERSTATUS_MISSING_DID_KEY,
		ERR_PAYMENT_CDI_INVALID,
		ERR_PAYMENT_CID_AND_CLT,
		ERR_PAYMENT_CUSTOMER_INVALID,
		ERR_PAYMENT_CWI_INVALID,
		ERR_PAYMENT_DISTRICT_INVALID,
		ERR_PAYMENT_HAM_INVALID,
		ERR_PAYMENT_HAM_RANGE,
		ERR_PAYMENT_LAST_NAME_TO_LONG,
		ERR_PAYMENT_MISSING_CDI_KEY,
		ERR_PAYMENT_MISSING_CID_CLT,
		ERR_PAYMENT_MISSING_CID_KEY,
		ERR_PAYMENT_MISSING_CLT,
		ERR_PAYMENT_MISSING_CLT_KEY,
		ERR_PAYMENT_MISSING_CWI_KEY,
		ERR_PAYMENT_MISSING_DID_KEY,
		ERR_PAYMENT_MISSING_HAM_KEY,
		ERR_STOCKLEVEL_MISSING_THRESHOLD_KEY,
		ERR_STOCKLEVEL_THRESHOLD_INVALID,
		ERR_STOCKLEVEL_THRESHOLD_RANGE,
		ERR_VERSION_MISMATCH,
		ERR_W_ID_INVALID
	};

class CWEBCLNT_ERR : public CBaseErr
{
	public:

		CWEBCLNT_ERR(WEBERROR Err)
		{
			m_Error = Err;
			m_szTextDetail = NULL;
			m_SystemErr = 0;
			m_szErrorText = NULL;
		};

		CWEBCLNT_ERR(WEBERROR Err, char *szTextDetail, DWORD dwSystemErr)
		{
			m_Error = Err;
			m_szTextDetail = new char[strlen(szTextDetail)+1];
			strcpy( m_szTextDetail, szTextDetail );
			m_SystemErr = dwSystemErr;
			m_szErrorText = NULL;
		};

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

		WEBERROR	m_Error;
		char			*m_szTextDetail;
	//
		char			*m_szErrorText;
		DWORD			m_SystemErr;

		int ErrorType() {return ERR_TYPE_WEBDLL;};
		int ErrorNum() {return m_Error;};
		char *ErrorText();

};

//These constants have already been defined in engstut.h, but since we do
//not want to include it in the delisrv executable
#define	TXN_EVENT_START			2
#define	TXN_EVENT_STOP			4
#define TXN_EVENT_WARNING  6		//used to record a warning into the log

//function prototypes

BOOL APIENTRY DllMain(HANDLE hModule, DWORD ul_reason_for_call, LPVOID lpReserved);
void WriteMessageToEventLog(LPTSTR lpszMsg);
void ProcessQueryString(EXTENSION_CONTROL_BLOCK *pECB, int *pCmd, int *pFormId, int *pTermId, int *pSyncId);
void WelcomeForm(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void SubmitCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void BeginCmd(EXTENSION_CONTROL_BLOCK *pECB, int iFormId, int iTermId);
void ProcessCmd(EXTENSION_CONTROL_BLOCK *pECB, int iFormId, int iTermId);
void StatsCmd(EXTENSION_CONTROL_BLOCK *pECB, char *szBuffer);
void ErrorMessage(EXTENSION_CONTROL_BLOCK *pECB, int iError, int iErrorType, char *szMsg, int iTermId);
void GetKeyValue(char **pQueryString, char *pKey, char *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_BLOCK	*pECB, int iTermId, char *szBuffer);
void ProcessPaymentForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char *szBuffer);
void ProcessOrderStatusForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char *szBuffer);
void ProcessDeliveryForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char *szBuffer);
void ProcessStockLevelForm(EXTENSION_CONTROL_BLOCK *pECB, int iTermId, char *szBuffer);
void GetNewOrderData(LPSTR lpszQueryString, NEW_ORDER_DATA *pNewOrderData);
void GetPaymentData(LPSTR lpszQueryString, PAYMENT_DATA *pPaymentData);
void GetOrderStatusData(LPSTR lpszQueryString, ORDER_STATUS_DATA *pOrderStatusData);
BOOL PostDeliveryInfo(short w_id, short o_carrier_id);
BOOL IsNumeric(char *ptr);
BOOL IsDecimal(char *ptr);
void DeliveryWorkerThread(void *ptr);
```

isapi_dll/src/tpcc.rc

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

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

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

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

#if !defined(AFX_RESOURCE_DLL) || defined(AFX_TARG_ENU)
```

```
#ifdef _WIN32
LANGUAGE LANG_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
```

tm_com_dll/tm_com_dll.dsp

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

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

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

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

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

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

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

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

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

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

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

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

!ENDIF

# Begin Target

# Name "tm_com_dll - Win32 Release"
# Name "tm_com_dll - Win32 Debug"
# Begin Source File

SOURCE=.\src\tpcc_com.cpp
# End Source File
# Begin Source File

SOURCE=.\src\tpcc_com.h
# End Source File
# End Target
# End Project
```

tm_com_dll/src/tpcc_com.cpp

```
/*            FILE:                         TPCC_COM.CPP
 *                                                          Microsoft TPC-C Kit Ver.
4.20.000
 *                                                          Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                                          not yet audited
 *
 *            PURPOSE:      Source file for TPC-C COM+ class implementation.
 *            Contact:      Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                          4.20.000 - first version
 */

// needed for CoinitializeEx
#define _WIN32_WINNT 0x0400

#include <windows.h>

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

#include "..\..\common\src\trans.h"                 //tpckit transaction
header contains definations of structures specific to TPC-C
#include "..\..\common\src\error.h"
#include "..\..\common\src\txn_base.h"
#include "tpcc_com.h"

#include "..\..\tpcc_com_ps\src\tpcc_com_ps_i.c"
#include "..\..\tpcc_com_all\src\tpcc_com_all_i.c"

// wrapper routine for class constructor
__declspec(dllexport) CTPCC_COM* CTPCC_COM_new(BOOL bSinglePool)
{
            return new CTPCC_COM(bSinglePool);
}

CTPCC_COM::CTPCC_COM(BOOL bSinglePool)
{
            HRESULT hr = NULL;
            long lRet = 0;
            ULONG ulTmpSize = 0;

            m_pTxn                                  = NULL;
            m_pNewOrder                 = NULL;
            m_pPayment                  = NULL;
            m_pStockLevel = NULL;
            m_pOrderStatus              = NULL;

            m_bSinglePool = bSinglePool;

            ulTmpSize = (ULONG) sizeof(COM_DATA);
            VariantInit(&m_vTxn);
            m_vTxn.vt = VT_SAFEARRAY;

            m_vTxn.parray = SafeArrayCreateVector(VT_UI1, ulTmpSize,
ulTmpSize);
            if (!m_vTxn.parray)
                        throw new CCOMERR( E_FAIL );

            memset((void*)m_vTxn.parray->pvData,0,ulTmpSize);
            m_pTxn = (COM_DATA*)m_vTxn.parray->pvData;

            hr = CoInitializeEx(NULL, COINIT_MULTITHREADED);
            if (FAILED(hr))
            {
                        throw new CCOMERR( hr );
            }

            // create components
            if (m_bSinglePool)
            {
                        hr = CoCreateInstance(CLSID_TPCC, NULL, CLSCTX_SERVER,
IID_ITPCC, (void **)&m_pNewOrder);
                        if (FAILED(hr))
                                    throw new CCOMERR(hr);
```

```
                        // all txns will use same component
                        m_pPayment = m_pNewOrder;
                        m_pStockLevel = m_pNewOrder;
                        m_pOrderStatus = m_pNewOrder;
                }
                else
                {
                        // use different components for each txn

                        hr = CoCreateInstance(CLSID_NewOrder, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pNewOrder);
                        if (FAILED(hr))
                                throw new CCOMERR(hr);

                        hr = CoCreateInstance(CLSID_Payment, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pPayment);
                        if (FAILED(hr))
                                throw new CCOMERR(hr);

                        hr = CoCreateInstance(CLSID_StockLevel, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pStockLevel);
                        if (FAILED(hr))
                                throw new CCOMERR(hr);

                        hr = CoCreateInstance(CLSID_OrderStatus, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pOrderStatus);
                        if (FAILED(hr))
                                throw new CCOMERR(hr);
                }

                // call setcomplete to release each component back into pool
                hr = m_pNewOrder->CallSetComplete();
                if (FAILED(hr))
                        throw new CCOMERR(hr);

                if (!m_bSinglePool)
                {
                        hr = m_pPayment->CallSetComplete();
                        if (FAILED(hr))
                                throw new CCOMERR(hr);

                        hr = m_pStockLevel->CallSetComplete();
                        if (FAILED(hr))
                                throw new CCOMERR(hr);

                        hr = m_pOrderStatus->CallSetComplete();
                        if (FAILED(hr))
                                throw new CCOMERR(hr);
                }
}

CTPCC_COM::~CTPCC_COM()
{
                if (m_pTxn)
                        SafeArrayDestroy(m_vTxn.parray);

                ReleaseInterface(m_pNewOrder);
                if (!m_bSinglePool)
                {
                        ReleaseInterface(m_pPayment);
                        ReleaseInterface(m_pStockLevel);
                        ReleaseInterface(m_pOrderStatus);
                }
                CoUninitialize();
}

void CTPCC_COM::NewOrder()
{
                VARIANT   vTxn_out;

                HRESULT hr = m_pNewOrder->NewOrder(m_vTxn, &vTxn_out);
                if (FAILED(hr))
                        throw new CCOMERR( hr );
                memcpy(m_pTxn, (void *)vTxn_out.parray->pvData,vTxn_out.parray-
>rgsabound[0].cElements);
                SafeArrayDestroy(vTxn_out.parray);

                if ( m_pTxn->ErrorType != ERR_SUCCESS )
                        throw new CCOMERR( m_pTxn->ErrorType, m_pTxn-
>error );
}

void CTPCC_COM::Payment()
{
                VARIANT   vTxn_out;

                HRESULT hr = m_pPayment->Payment(m_vTxn, &vTxn_out);
                if (FAILED(hr))
                        throw new CCOMERR( hr );
                memcpy(m_pTxn, (void *)vTxn_out.parray->pvData,vTxn_out.parray-
>rgsabound[0].cElements);
                SafeArrayDestroy(vTxn_out.parray);

                if ( m_pTxn->ErrorType != ERR_SUCCESS )
                        throw new CCOMERR( m_pTxn->ErrorType, m_pTxn-
>error );
}

void CTPCC_COM::StockLevel()
{
                VARIANT   vTxn_out;

                HRESULT hr = m_pStockLevel->StockLevel(m_vTxn, &vTxn_out);
                if (FAILED(hr))
                        throw new CCOMERR( hr );
                memcpy(m_pTxn, (void *)vTxn_out.parray->pvData,vTxn_out.parray-
>rgsabound[0].cElements);
                SafeArrayDestroy(vTxn_out.parray);

                if ( m_pTxn->ErrorType != ERR_SUCCESS )
                        throw new CCOMERR( m_pTxn->ErrorType, m_pTxn-
>error );
}

void CTPCC_COM::OrderStatus()
{
                VARIANT   vTxn_out;

                HRESULT hr = m_pOrderStatus->OrderStatus(m_vTxn, &vTxn_out);
                if (FAILED(hr))
                        throw new CCOMERR( hr );
                memcpy(m_pTxn, (void *)vTxn_out.parray->pvData,vTxn_out.parray-
>rgsabound[0].cElements);
                SafeArrayDestroy(vTxn_out.parray);

                if ( m_pTxn->ErrorType != ERR_SUCCESS )
                        throw new CCOMERR( m_pTxn->ErrorType, m_pTxn-
>error );
}
```

tm_com_dll/src/tpcc_com.h

```
/*           FILE:                      TPCC_COM.H
 *                                                  Microsoft TPC-C Kit Ver.
4.20.000
 *                                                  Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                                  not yet audited
 *
 *           PURPOSE:      Header file for TPC-C COM+ class implementation.
 *
 *  Change history:
 *                         4.20.000 - first version
 */

#pragma once

#include <stdio.h>
#include "..\..\tpcc_com_ps\src\tpcc_com_ps.h"

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

class CCOMERR : public CBaseErr
{
                private:
                        char m_szErrorText[64];

                public:
                        // use this interface for genuine COM errors
                        CCOMERR( HRESULT hr )
                        {
                                m_hr = hr;
                                m_iErrorType = 0;
                                m_iError = 0;
                        }

                        // use this interface to impersonate a non-COM error
type
                        CCOMERR( int iErrorType, int iError )
                        {
                                m_iErrorType = iErrorType;
                                m_iError = iError;
                                m_hr = S_OK;
                        }

                        int                     m_hr;
                        int                     m_iErrorType;
                        int                     m_iError;

                        // A CCOMERR class can impersonate another class,
which happens if the error
                        // was not actually a COM Services error, but was
simply transmitted back via COM.
                        int ErrorType()
                        {
                                if (m_iErrorType == 0)
                                        return ERR_TYPE_COM;
                                else
                                        return m_iErrorType;
                        }

                        int ErrorNum() {return m_hr;}

                        char *ErrorText()
                        {
                                if (m_hr == S_OK)
                                        sprintf( m_szErrorText,
"Error: Class %d, error # %d", m_iErrorType, m_iError );
                                else
                                        sprintf( m_szErrorText,
"Error: COM HRESULT %x", m_hr );
                                return m_szErrorText;
                        }
};

class DllDecl CTPCC_COM : public CTPCC_BASE
{
                private:
                        BOOL m_bSinglePool;

                        // COM Interface pointers
                        ITPCC*                                  m_pNewOrder;
                        ITPCC*                                  m_pPayment;
                        ITPCC*
                m_pStockLevel;
                        ITPCC*
                m_pOrderStatus;

                        struct COM_DATA
                        {
                                int ErrorType;
                                int error;
                                union
                                {
                                        NEW_ORDER_DATA
                NewOrder;
                                        PAYMENT_DATA
                Payment;
                                        DELIVERY_DATA
                Delivery;
                                        STOCK_LEVEL_DATA
                StockLevel;
                                        ORDER_STATUS_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);
```

tpcc_com_all/tpcc_com_all.dsp

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

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

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

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

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
```

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

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /machine:I386
# ADD LINK32 ..\db_dblib_dll\bin\tpcc_dblib.lib ..\db_odbc_dll\bin\tpcc_odbc.lib
kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib

advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
/nologo /subsystem:windows /dll /machine:I386

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

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

odbc32.lib odbccp32.lib /nologo /subsystem:windows /dll /debug /machine:I386
/pdbtype:sept
# ADD LINK32 ..\db_dblib_dll\bin\tpcc_dblib.lib ..\db_odbc_dll\bin\tpcc_odbc.lib
kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib

advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
/nologo /subsystem:windows /dll /debug /machine:I386

/pdbtype:sept

!ENDIF

# Begin Target

# Name "tpcc_com_all - Win32 Release"
# Name "tpcc_com_all - Win32 Debug"
# Begin Group "Source"

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

SOURCE=.\src\tpcc_com_all.cpp
# SUBTRACT CPP /YX
# End Source File
# Begin Source File

SOURCE=.\src\tpcc_com_all.def
# End Source File
# Begin Source File

SOURCE=.\src\tpcc_com_all.idl

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

# PROP Ignore_Default_Tool 1
# Begin Custom Build - Performing MIDL step
InputPath=.\src\tpcc_com_all.idl

BuildCmds= \
        midl /Oicf /h "tpcc_com_all.h" /iid "tpcc_com_all_i.c"
".\src\tpcc_com_all.idl"   /out ".\src"

".\src\tpcc_com_all.tlb" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_all.h" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_all_i.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)
# End Custom Build

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

# PROP Ignore_Default_Tool 1
# Begin Custom Build - Performing MIDL step
InputPath=.\src\tpcc_com_all.idl

BuildCmds= \
        midl /Oicf /h "tpcc_com_all.h" /iid "tpcc_com_all_i.c"
".\src\tpcc_com_all.idl"   /out ".\src"

".\src\tpcc_com_all.tlb" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_all.h" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_all_i.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)
# End Custom Build

!ENDIF

# End Source File
# End Group
# Begin Group "Header"

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

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

SOURCE=.\src\resource.h
# End Source File
# End Group
# Begin Source File

SOURCE=.\src\tpcc_com_all.rc
# End Source File
# End Target
# End Project
```

tpcc_com_all/src/Methods.h

```
/*           FILE:                      METHODS.H
 *                                                  Microsoft TPC-C Kit Ver.
4.20.000
 *                                                  Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                                  not yet audited
 *
 *           PURPOSE:      Header file for COM components.
 *
 *  Change history:
 *                         4.20.000 - first version
 */


enum 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;};
                        int ErrorNum() {return m_Error;};
                        char *ErrorText();
};

class CCOMPONENT_WARN : public CBaseErr
{
            public:
                        CCOMPONENT_WARN(COMPONENT_ERROR Err)
                        {
                                    m_Error = Err;
                                    m_szTextDetail = NULL;
                                    m_SystemErr = 0;
                                    m_szErrorText = NULL;
                        };

                        CCOMPONENT_WARN(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_WARN()
                        {
                                    if (m_szTextDetail != NULL)
                                                delete [] m_szTextDetail;
                                    if (m_szErrorText != NULL)
                                                delete [] m_szErrorText;
                        };

                        COMPONENT_ERROR            m_Error;
                        char
            *m_szTextDetail;
                        char
            *m_szErrorText;
                        DWORD                                   m_SystemErr;

                        int ErrorType() {return ERR_TYPE_COMPONENT;};
                        int ErrorNum() {return m_Error;};
                        char *ErrorText();
};

static void WriteMessageToEventLog(LPTSTR lpszMsg);

/////////////////////////////////////////////////////////////////////////////
// CTPCC_Common
class CTPCC_Common :
            public ITPCC,
            public IObjectControl,
            public IObjectConstruct,
            public CComObjectRootEx<CComSingleThreadModel>
{
public:
BEGIN_COM_MAP(CTPCC_Common)
            COM_INTERFACE_ENTRY(ITPCC)
            COM_INTERFACE_ENTRY(IObjectControl)
            COM_INTERFACE_ENTRY(IObjectConstruct)
END_COM_MAP()

            CTPCC_Common();
            ~CTPCC_Common();

// ITPCC
public:
            HRESULT __stdcall NewOrder(                         VARIANT
txn_in, VARIANT* txn_out);
            HRESULT __stdcall Payment(              VARIANT txn_in, VARIANT*
txn_out);
            HRESULT __stdcall Delivery(                         VARIANT
txn_in, VARIANT* txn_out) {return E_NOTIMPL;}
            HRESULT __stdcall StockLevel(           VARIANT txn_in, VARIANT*
txn_out);
            HRESULT __stdcall OrderStatus(          VARIANT txn_in, VARIANT*
txn_out);

            HRESULT __stdcall 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(IUnknown, CComObjectRootEx)
            COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

};


/////////////////////////////////////////////////////////////////////////////
// CNewOrder
class CNewOrder :
            public CTPCC_Common,
            public CComCoClass<CNewOrder, &CLSID_NewOrder>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_NEWORDER)

BEGIN_COM_MAP(CNewOrder)
            COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
            COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
//          HRESULT __stdcall NewOrder(                         VARIANT
txn_in, VARIANT* txn_out) {return E_NOTIMPL;}
            HRESULT __stdcall Payment(              VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
            HRESULT __stdcall 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_ORDERSTATUS)

BEGIN_COM_MAP(COrderStatus)
        COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
        COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
        HRESULT __stdcall NewOrder(                     VARIANT
txn_in, VARIANT* txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall Payment(          VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall StockLevel(       VARIANT txn_in, 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_PAYMENT)

BEGIN_COM_MAP(CPayment)
        COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
        COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
        HRESULT __stdcall NewOrder(                     VARIANT
txn_in, VARIANT* txn_out) {return E_NOTIMPL;}
//      HRESULT __stdcall Payment(          VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall StockLevel(       VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall OrderStatus(      VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
};


////////////////////////////////////////////////////////////////////////////
// CStockLevel
class CStockLevel :
        public CTPCC_Common,
        public CComCoClass<CStockLevel, &CLSID_StockLevel>
{
public:
DECLARE_REGISTRY_RESOURCEID(IDR_STOCKLEVEL)

BEGIN_COM_MAP(CStockLevel)
        COM_INTERFACE_ENTRY2(IUnknown, CComObjectRootEx)
        COM_INTERFACE_ENTRY_CHAIN(CTPCC_Common)
END_COM_MAP()

// ITPCC
public:
        HRESULT __stdcall NewOrder(                     VARIANT
txn_in, VARIANT* txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall Payment(          VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
//      HRESULT __stdcall StockLevel(       VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
        HRESULT __stdcall OrderStatus(      VARIANT txn_in, VARIANT*
txn_out) {return E_NOTIMPL;}
};
```

tpcc_com_all/src/resource.h

```
//{{NO_DEPENDENCIES}}
// Microsoft Developer Studio generated include file.
// Used by tpcc_com_all.rc
//
#define IDS_PROJNAME                    100
#define IDR_TPCC                        101
#define IDR_NEWORDER                    102
#define IDR_ORDERSTATUS                 103
#define IDR_PAYMENT                     104
#define IDR_STOCKLEVEL                  105

// Next default values for new objects
//
#ifdef APSTUDIO_INVOKED
#ifndef APSTUDIO_READONLY_SYMBOLS
#define _APS_NEXT_RESOURCE_VALUE        202
#define _APS_NEXT_COMMAND_VALUE         32768
#define _APS_NEXT_CONTROL_VALUE         201
#define _APS_NEXT_SYMED_VALUE           106
#endif
#endif
```

tpcc_com_all/src/tpcc_com_all.cpp

```
/*           FILE:                      TPCC_COM_ALL.CPP
 *                                                      Microsoft TPC-C Kit Ver.
4.20.000
 *                                                      Copyright Microsoft, 1999
 *             All Rights Reserved
 *
 *                                                      Version 4.10.000 audited
by Richard Gimarc, Performance Metrics, 3/17/99
 *
 *           PURPOSE:     Implementation for TPC-C Tuxedo class.
 *           Contact:     Charles Levine (clevine@microsoft.com)
 *
 *  Change history:
 *                        4.20.000 - updated rev number to match kit
 */

#define STRICT
#define _WIN32_WINNT 0x0400
#define _ATL_APARTMENT_THREADED

#include <stdio.h>
#include <atlbase.h>
//You may derive a class from CComModule and use it if you want to override
//something, but do not change the name of _Module
extern CComModule _Module;

#include <atlcom.h>
#include <initguid.h>
#include <transact.h>
#include <atlimpl.cpp>
#include <comsvcs.h>

#include <sqltypes.h>
#include <sql.h>
#include <sqlext.h>

#include "tpcc_com_ps.h"
#include "..\..\common\src\trans.h"
        //tpckit transaction header contains definations of structures
specific

to TPC-C
#include "..\..\common\src\txn_base.h"
#include "..\..\common\src\error.h"
#include "..\..\common\src\ReadRegistry.h"
#include "..\..\db_dblib_dll\src\tpcc_dblib.h"                  // DBLIB
implementation of TPC-C txns
#include "..\..\db_odbc_dll\src\tpcc_odbc.h"                    // ODBC
implementation of TPC-C txns

#include "resource.h"
#include "tpcc_com_all.h"
#include "tpcc_com_all_i.c"
#include "Methods.h"
#include "..\..\tpcc_com_ps\src\tpcc_com_ps_i.c"
#include "..\..\common\src\ReadRegistry.cpp"


CComModule _Module;

BEGIN_OBJECT_MAP(ObjectMap)
        OBJECT_ENTRY(CLSID_TPCC, CTPCC)
        OBJECT_ENTRY(CLSID_NewOrder, CNewOrder)
        OBJECT_ENTRY(CLSID_OrderStatus, COrderStatus)
        OBJECT_ENTRY(CLSID_Payment, CPayment)
        OBJECT_ENTRY(CLSID_StockLevel, CStockLevel)
END_OBJECT_MAP()


// configuration settings from registry
TPCCREGISTRYDATA        Reg;
char
        szMyComputerName[MAX_COMPUTERNAME_LENGTH+1];

static  HINSTANCE hLibInstanceDb = NULL;

TYPE_CTPCC_DBLIB        *pCTPCC_DBLIB_new;
TYPE_CTPCC_ODBC                 *pCTPCC_ODBC_new;


////////////////////////////////////////////////////////////////////////////
// DLL Entry Point

extern "C"
BOOL WINAPI DllMain(HINSTANCE hInstance, DWORD dwReason, LPVOID /*lpReserved*/)
{
        char szDllName[128];

        try
        {
                if (dwReason == DLL_PROCESS_ATTACH)
                {
                        _Module.Init(ObjectMap, hInstance);
                        DisableThreadLibraryCalls(hInstance);

                        DWORD dwSize =
MAX_COMPUTERNAME_LENGTH+1;
                        GetComputerName(szMyComputerName,
&dwSize);
                        szMyComputerName[dwSize] = 0;

                        if ( ReadTPCCRegistrySettings( &Reg ) )
                                throw new
CCOMPONENT_ERR( ERR_MISSING_REGISTRY_ENTRIES );

                        if (Reg.eDB_Protocol == DBLIB)
                        {
                                strcpy( szDllName,
Reg.szPath );
                                strcat( szDllName,
"tpcc_dblib.dll");
                                hLibInstanceDb =
LoadLibrary( szDllName );
                                if (hLibInstanceDb ==
NULL)
                                        throw new
CCOMPONENT_ERR( ERR_LOADDLL_FAILED, szDllName, 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 );
                        }
                        else if (dwReason == DLL_PROCESS_DETACH)
                                _Module.Term();

                }
                catch (CBaseErr *e)
                {
                        WriteMessageToEventLog(e->ErrorText());
                        delete e;
                        return FALSE;
                }
                catch (...)
                {
                        WriteMessageToEventLog(TEXT("Unhandled exception in
object DllMain"));
                        return FALSE;
                }

                return TRUE; // OK
}

////////////////////////////////////////////////////////////////////////////
// Used to determine whether the DLL can be unloaded by OLE

STDAPI DllCanUnloadNow(void)
{
                return (_Module.GetLockCount()==0) ? S_OK : S_FALSE;
}

////////////////////////////////////////////////////////////////////////////
// Returns a 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()
{
            if (m_pTxn)
                        delete m_pTxn;
}

HRESULT CTPCC_Common::CallSetComplete()
{
            IObjectContext* pObjectContext = NULL;

            // get our object context
            HRESULT hr = CoGetObjectContext( IID_IObjectContext, (void
**)&pObjectContext );
            pObjectContext->SetComplete();
            ReleaseInterface(pObjectContext);
            return hr;
}

//
//          called by the ctor activator
//
```

```
STDMETHODIMP CTPCC_Common::Construct(IDispatch * pUnk)
{
            // Code to access construction string, if needed later...
            //          if (!pUnk)
            //                      return E_UNEXPECTED;
            //          IObjectConstructString * pString = NULL;
            //          HRESULT hr = pUnk-
>QueryInterface(IID_IObjectConstructString, (void **)&pString);
            //          pString->Release();

            try
            {
                        if (Reg.eDB_Protocol == ODBC)
                                    m_pTxn = pCTPCC_ODBC_new( Reg.szDbServer,
Reg.szDbUser, Reg.szDbPassword, szMyComputerName, Reg.szDbName );
                        else if (Reg.eDB_Protocol == DBLIB)
                                    m_pTxn =
pCTPCC_DBLIB_new( Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword,
szMyComputerName, Reg.szDbName );
            }
            catch (CBaseErr *e)
            {
                        WriteMessageToEventLog(e->ErrorText());
                        delete e;
                        return E_FAIL;
            }
            catch (...)
            {
                        WriteMessageToEventLog(TEXT("Unhandled exception in
object ::Construct"));
                        return E_FAIL;
            }

            return S_OK;
}

HRESULT CTPCC_Common::NewOrder(VARIANT txn_in, VARIANT* txn_out)
{
            PNEW_ORDER_DATA             pNewOrder;
            COM_DATA                    *pData;
            try
            {
                        pData = (COM_DATA*)txn_in.parray->pvData;
                        pNewOrder = m_pTxn->BuffAddr_NewOrder();

                        memcpy(pNewOrder, &pData->u.NewOrder,
sizeof(NEW_ORDER_DATA));
                        m_pTxn->NewOrder();                         // do the
actual txn

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

            txn_in.parray->rgsabound->cElements,

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

                        memcpy( &pData->u.NewOrder, pNewOrder,
sizeof(NEW_ORDER_DATA));

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

                        pData->retval = e->ErrorType();
                        pData->error = e->ErrorNum();
                        delete e;
                        return E_FAIL;
            }
            catch (...)
            {
                        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("Unhandled exception."));
                        pData->retval = ERR_TYPE_LOGIC;
                        pData->error = 0;
                        m_bCanBePooled = FALSE;
                        return E_FAIL;
            }
}
```

tpcc_com_all/src/tpcc_com_all.def

```
; tpcc_com_all.def : Declares the module parameters.

LIBRARY      "tpcc_com_all.dll"

EXPORTS
            DllCanUnloadNow     @1 PRIVATE
            DllGetClassObject   @2 PRIVATE
            DllRegisterServer   @3 PRIVATE
            DllUnregisterServer        @4 PRIVATE
```

tpcc_com_all/src/tpcc_com_all.h

```
#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the definitions for the interfaces */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:14 2001
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


/* verify that the <rpcndr.h> version is high enough to compile this file*/
#ifndef __REQUIRED_RPCNDR_H_VERSION__
#define __REQUIRED_RPCNDR_H_VERSION__ 440
#endif

#include "rpc.h"
#include "rpcndr.h"

#ifndef __tpcc_com_all_h__
#define __tpcc_com_all_h__

/* Forward Declarations */

#ifndef __TPCC_FWD_DEFINED__
#define __TPCC_FWD_DEFINED__

#ifdef __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_FAR * __RPC_USER MIDL_user_allocate(size_t);
void __RPC_USER MIDL_user_free( void __RPC_FAR * );

/* interface __MIDL_itf_tpcc_com_all_0000 */
/* [local] */




extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_all_0000_v0_0_c_ifspec;
extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_all_0000_v0_0_s_ifspec;


#ifndef __TPCCLib_LIBRARY_DEFINED__
#define __TPCCLib_LIBRARY_DEFINED__

/* library TPCCLib */
/* [helpstring][version][uuid] */


EXTERN_C const IID LIBID_TPCCLib;

EXTERN_C const CLSID CLSID_TPCC;

#ifdef __cplusplus

class DECLSPEC_UUID("122A3128-2520-11D3-BA71-00C04FBFE08B")
TPCC;
#endif

EXTERN_C const CLSID CLSID_NewOrder;

#ifdef __cplusplus

class DECLSPEC_UUID("975BAABF-84A7-11D2-BA47-00C04FBFE08B")
NewOrder;
#endif

EXTERN_C const CLSID CLSID_OrderStatus;

#ifdef __cplusplus

class DECLSPEC_UUID("266836AD-A50D-11D2-BA4E-00C04FBFE08B")
OrderStatus;
#endif

EXTERN_C const CLSID CLSID_Payment;

#ifdef __cplusplus

class DECLSPEC_UUID("CD02F7EF-A4FA-11D2-BA4E-00C04FBFE08B")
Payment;
#endif

EXTERN_C const CLSID CLSID_StockLevel;

#ifdef __cplusplus

class DECLSPEC_UUID("2668369E-A50D-11D2-BA4E-00C04FBFE08B")
StockLevel;
#endif
#endif /* __TPCCLib_LIBRARY_DEFINED__ */

/* Additional Prototypes for ALL interfaces */

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif
```

tpcc_com_all/src/tpcc_com_all.idl

```
/*           FILE:                        TPCC.IDL
 *                                                      Microsoft TPC-C Kit Ver.
4.20.000
 *                                                      Copyright Microsoft, 1999
 *             All Rights Reserved
 *
 *                                                      not yet audited
 *
 *           PURPOSE:      IDL source for TPCC.dll.  This file is processed by
the MIDL tool to
 *                                                      produce the type library
(TPCC.tlb) and marshalling code.
 *
 *  Change history:
 *                        4.20.000 - first version
 */

interface TPCC;
interface NewOrder;
interface OrderStatus;
interface Payment;
interface StockLevel;


import "oaidl.idl";
import "ocidl.idl";
import "..\tpcc_com_ps\src\tpcc_com_ps.idl";

[
            uuid(122A3117-2520-11D3-BA71-00C04FBFE08B),
            version(1.0),
            helpstring("TPC-C 1.0 Type Library")
]
library TPCCLib
{
            importlib("stdole32.tlb");
            importlib("stdole2.tlb");

            [
                        uuid(122A3128-2520-11D3-BA71-00C04FBFE08B),
                        helpstring("All Txns Class")
            ]
            coclass TPCC
            {
                        [default] interface ITPCC;
            };


            [
                        uuid(975BAABF-84A7-11D2-BA47-00C04FBFE08B),
                        helpstring("NewOrder Class")
            ]
            coclass NewOrder
            {
                        [default] interface ITPCC;
            };


            [
                        uuid(266836AD-A50D-11D2-BA4E-00C04FBFE08B),
                        helpstring("OrderStatus Class")
            ]
            coclass OrderStatus
            {
                        [default] interface ITPCC;
            };


            [
                        uuid(CD02F7EF-A4FA-11D2-BA4E-00C04FBFE08B),
                        helpstring("Payment Class")
            ]
            coclass Payment
            {
                        [default] interface ITPCC;
            };


            [
                        uuid(2668369E-A50D-11D2-BA4E-00C04FBFE08B),
                        helpstring("StockLevel Class")
            ]
            coclass StockLevel
            {
                        [default] interface ITPCC;
            };

};
```

tpcc_com_all/src/tpcc_com_all.rc

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

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

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

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

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

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

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

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

3 TEXTINCLUDE DISCARDABLE
BEGIN
    "1 TYPELIB ""tpcc_com_all.tlb""\r\n"
    "\0"
END

#endif    // APSTUDIO_INVOKED


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

VS_VERSION_INFO VERSIONINFO
 FILEVERSION 1,0,0,1
 PRODUCTVERSION 1,0,0,1
 FILEFLAGSMASK 0x3fL
#ifdef _DEBUG
 FILEFLAGS 0x1L
#else
 FILEFLAGS 0x0L
#endif
 FILEOS 0x4L
 FILETYPE 0x2L
 FILESUBTYPE 0x0L
BEGIN
    BLOCK "StringFileInfo"
    BEGIN
        BLOCK "040904B0"
        BEGIN
            VALUE "CompanyName", "\0"
            VALUE "FileDescription", "tpcc_com_all Module\0"
            VALUE "FileVersion", "1, 0, 0, 1\0"
            VALUE "InternalName", "TPCCNEWORDER\0"
            VALUE "LegalCopyright", "Copyright 1997\0"
            VALUE "OriginalFilename", "tpcc_com_all.DLL\0"
            VALUE "ProductName", "tpcc_com_all Module\0"
            VALUE "ProductVersion", "1, 0, 0, 1\0"
            VALUE "OLESelfRegister", "\0"
        END
    END
    BLOCK "VarFileInfo"
    BEGIN
        VALUE "Translation", 0x409, 1200
    END
END

#endif    // !_MAC


////////////////////////////////////////////////////////////////////////////
//
// REGISTRY
//

IDR_TPCC                REGISTRY DISCARDABLE    "tpcc_com_all.rgs"
IDR_NEWORDER            REGISTRY DISCARDABLE    "tpcc_com_no.rgs"
IDR_ORDERSTATUS         REGISTRY DISCARDABLE    "tpcc_com_os.rgs"
IDR_PAYMENT             REGISTRY DISCARDABLE    "tpcc_com_pay.rgs"
IDR_STOCKLEVEL          REGISTRY DISCARDABLE    "tpcc_com_sl.rgs"

////////////////////////////////////////////////////////////////////////////
//
// String Table
//

STRINGTABLE DISCARDABLE
BEGIN
    IDS_PROJNAME            "tpcc_com_all"
END

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


#ifndef APSTUDIO_INVOKED
////////////////////////////////////////////////////////////////////////////
//
// Generated from the TEXTINCLUDE 3 resource.
//
1 TYPELIB "tpcc_com_all.tlb"

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

tpcc_com_all/src/tpcc_com_all.rgs

```
HKCR
{
            TPCC.AllTxns.1 = s 'All Txns Class'
            {
                        CLSID = s '{122A3128-2520-11D3-BA71-00C04FBFE08B}'
            }
            TPCC.AllTxns = s 'TPCC Class'
            {
                        CurVer = s 'TPCC.AllTxns.1'
            }
            NoRemove CLSID
            {
                        ForceRemove {122A3128-2520-11D3-BA71-00C04FBFE08B} =
s 'TPCC Class'
                        {
                                    ProgID = s 'TPCC.AllTxns.1'
                                    VersionIndependentProgID = s
'TPCC.AllTxns'
                                    InprocServer32 = s '%MODULE%'
                                    {
                                                val ThreadingModel = s
'Both'
                                    }
                        }
            }
}
```

tpcc_com_all/src/tpcc_com_all_i.c

```
#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the IIDs and CLSIDs */

/* link this file in with the server and any clients */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:14 2001
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if !defined(_M_IA64) && !defined(_M_AXP64)

#ifdef __cplusplus
extern "C"{
#endif


#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        const type name = {l,w1,w2,{b1,b2,b3,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
LIBID_TPCCLib,0x122A3117,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_TPCC,0x122A3128,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_NewOrder,0x975BAABF,0x84A7,0x11D2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B)
;


MIDL_DEFINE_GUID(CLSID,
CLSID_OrderStatus,0x266836AD,0xA50D,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x
8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_Payment,0xCD02F7EF,0xA4FA,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_StockLevel,0x2668369E,0xA50D,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8
B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif


#endif /* !defined(_M_IA64) && !defined(_M_AXP64)*/


#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the IIDs and CLSIDs */

/* link this file in with the server and any clients */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:14 2001
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext,
robust
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if defined(_M_IA64) || defined(_M_AXP64)

#ifdef __cplusplus
extern "C"{
#endif


#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;
```

```
#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        const type name = {l,w1,w2,{b1,b2,b3,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
LIBID_TPCCLib,0x122A3117,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_TPCC,0x122A3128,0x2520,0x11D3,0xBA,0x71,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_NewOrder,0x975BAABF,0x84A7,0x11D2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B)
;


MIDL_DEFINE_GUID(CLSID,
CLSID_OrderStatus,0x266836AD,0xA50D,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x
8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_Payment,0xCD02F7EF,0xA4FA,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_StockLevel,0x2668369E,0xA50D,0x11D2,0xBA,0x4E,0x00,0xC0,0x4F,0xBF,0xE0,0x8
B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif


#endif /* defined(_M_IA64) || defined(_M_AXP64)*/
```

tpcc_com_all/src/tpcc_com_no.rgs

```
HKCR
{
            TPCC.NewOrder.1 = s 'NewOrder Class'
            {
                        CLSID = s '{975BAABF-84A7-11D2-BA47-00C04FBFE08B}'
            }
            TPCC.NewOrder = s 'NewOrder Class'
            {
                        CurVer = s 'TPCC.NewOrder.1'
            }
            NoRemove CLSID
            {
                        ForceRemove {975BAABF-84A7-11D2-BA47-00C04FBFE08B} =
s 'NewOrder Class'
                        {
                                    ProgID = s 'TPCC.NewOrder.1'
                                    VersionIndependentProgID = s
'TPCC.NewOrder'
                                    InprocServer32 = s '%MODULE%'
                                    {
                                                val ThreadingModel = s
'Both'
                                    }
                        }
            }
}
```

tpcc_com_all/src/tpcc_com_os.rgs

```
HKCR
{
            TPCC.OrderStatus.1 = s 'OrderStatus Class'
            {
                        CLSID = s '{266836AD-A50D-11D2-BA4E-00C04FBFE08B}'
            }
            TPCC.OrderStatus = s 'OrderStatus Class'
            {
                        CurVer = s 'TPCC.OrderStatus.1'
            }
            NoRemove CLSID
            {
                        ForceRemove {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 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


/* verify that the <rpcndr.h> version is high enough to compile this file*/
#ifndef __REQUIRED_RPCNDR_H_VERSION__
#define __REQUIRED_RPCNDR_H_VERSION__ 440
#endif

#include "rpc.h"
#include "rpcndr.h"

#ifndef __RPCNDR_H_VERSION__
#error this stub requires an updated version of <rpcndr.h>
#endif // __RPCNDR_H_VERSION__

#ifndef COM_NO_WINDOWS_H
#include "windows.h"
#include "ole2.h"
#endif /*COM_NO_WINDOWS_H*/

#ifndef __tpcc_com_ps_h__
#define __tpcc_com_ps_h__

/* Forward Declarations */

#ifndef __ITPCC_FWD_DEFINED__
#define __ITPCC_FWD_DEFINED__
typedef interface ITPCC ITPCC;
#endif      /* __ITPCC_FWD_DEFINED__ */


/* header files for imported files */
#include "oaidl.h"
#include "ocidl.h"

#ifdef __cplusplus
extern "C"{
#endif

void __RPC_FAR * __RPC_USER MIDL_user_allocate(size_t);
void __RPC_USER MIDL_user_free( void __RPC_FAR * );

/* interface __MIDL_itf_tpcc_com_ps_0000 */
/* [local] */



extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_ps_0000_v0_0_c_ifspec;
extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_ps_0000_v0_0_s_ifspec;
```

```
#ifndef __ITPCC_INTERFACE_DEFINED__
#define __ITPCC_INTERFACE_DEFINED__

/* interface ITPCC */
/* [unique][helpstring][uuid][oleautomation][object] */


EXTERN_C const IID IID_ITPCC;

#if defined(__cplusplus) && !defined(CINTERFACE)

    MIDL_INTERFACE("FEEE6AA2-84B1-11d2-BA47-00C04FBFE08B")
    ITPCC : public IUnknown
    {
    public:
        virtual HRESULT __stdcall NewOrder(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Payment(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Delivery(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall StockLevel(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall OrderStatus(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall CallSetComplete( void) = 0;

    };

#else        /* C style interface */

    typedef struct ITPCCVtbl
    {
        BEGIN_INTERFACE

        HRESULT ( STDMETHODCALLTYPE __RPC_FAR *QueryInterface )(
            ITPCC __RPC_FAR * This,
            /* [in] */ REFIID riid,
            /* [iid_is][out] */ void __RPC_FAR *__RPC_FAR *ppvObject);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *AddRef )(
            ITPCC __RPC_FAR * This);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *Release )(
            ITPCC __RPC_FAR * This);

        HRESULT ( __stdcall __RPC_FAR *NewOrder )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Payment )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Delivery )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *StockLevel )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *OrderStatus )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *CallSetComplete )(
            ITPCC __RPC_FAR * This);

        END_INTERFACE
    } ITPCCVtbl;

    interface ITPCC
    {
        CONST_VTBL struct ITPCCVtbl __RPC_FAR *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 __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_NewOrder_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Payment_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_Payment_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Delivery_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_Delivery_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_StockLevel_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_StockLevel_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_OrderStatus_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_OrderStatus_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_CallSetComplete_Proxy(
    ITPCC __RPC_FAR * This);


void __RPC_STUB ITPCC_CallSetComplete_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);



#endif       /* __ITPCC_INTERFACE_DEFINED__ */


/* Additional Prototypes for ALL interfaces */

unsigned long             __RPC_USER  VARIANT_UserSize(     unsigned long
__RPC_FAR *, unsigned long            , VARIANT __RPC_FAR * );
unsigned char __RPC_FAR * __RPC_USER  VARIANT_UserMarshal(  unsigned long
__RPC_FAR *, unsigned char __RPC_FAR *, VARIANT __RPC_FAR * );
unsigned char __RPC_FAR * __RPC_USER  VARIANT_UserUnmarshal(unsigned long
__RPC_FAR *, unsigned char __RPC_FAR *, VARIANT __RPC_FAR * );
void                      __RPC_USER  VARIANT_UserFree(     unsigned long
__RPC_FAR *, VARIANT __RPC_FAR * );

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif
```

tpcc_com_all/src/tpcc_com_sl.rgs

```
HKCR
{
            TPCC.StockLevel.1 = s 'StockLevel Class'
            {
                        CLSID = s '{2668369E-A50D-11D2-BA4E-00C04FBFE08B}'
            }
            TPCC.StockLevel = s 'StockLevel Class'
            {
                        CurVer = s 'TPCC.StockLevel.1'
            }
            NoRemove CLSID
            {
                        ForceRemove {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/tpcc_com_ps.dsp

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

# TARGTYPE "Win32 (x86) Application" 0x0101

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

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

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ".\bin"
# PROP Intermediate_Dir ".\obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /FD
/c
# ADD CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D _WIN32_WINNT=0x0400 /D
"REGISTER_PROXY_DLL" /FD /c
# SUBTRACT CPP /YX
# ADD BASE MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

odbc32.lib odbccp32.lib /nologo /subsystem:windows /machine:I386
# ADD LINK32 kernel32.lib rpcndr.lib rpcns4.lib rpcrt4.lib oleaut32.lib uuid.lib
/nologo /entry:"DllMain" /subsystem:windows /dll /pdb:none

/machine:I386 /def:".\src\tpcc_com_ps.def"
# Begin Custom Build - Copying tpcc_com_ps.h
InputPath=.\bin\tpcc_com_ps.dll
SOURCE="$(InputPath)"

"..\tpcc_com_all\src\tpcc_com_ps.h" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
            copy    .\src\tpcc_com_ps.h    ..\tpcc_com_all\src\

# End Custom Build

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "Debug"
# PROP BASE Intermediate_Dir "Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ".\bin"
# PROP Intermediate_Dir ".\obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS"
/YX /FD /c
# ADD CPP /nologo /ZI /Od /D "WIN32" /D "_DEBUG" /D _WIN32_WINNT=0x0400 /D
"REGISTER_PROXY_DLL" /FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL" /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib

odbc32.lib odbccp32.lib /nologo /subsystem:windows /debug /machine:I386
/pdbtype:sept
# ADD LINK32 kernel32.lib rpcndr.lib rpcns4.lib rpcrt4.lib oleaut32.lib uuid.lib
/nologo /entry:"DllMain" /dll /debug /machine:IX86

/def:".\src\tpcc_com_ps.def" /pdbtype:sept
# SUBTRACT LINK32 /pdb:none
# Begin Custom Build - Copying tpcc_com_ps.h
InputPath=.\bin\tpcc_com_ps.dll
SOURCE="$(InputPath)"

"..\tpcc_com_all\src\tpcc_com_ps.h" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
            copy    .\src\tpcc_com_ps.h    ..\tpcc_com_all\src\

# End Custom Build

!ENDIF

# Begin Target

# Name "tpcc_com_ps - Win32 Release"
# Name "tpcc_com_ps - Win32 Debug"
# Begin Group "Source"

# PROP Default_Filter ""
# Begin Source File

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

SOURCE=.\src\tpcc_com_ps.def
# PROP Exclude_From_Build 1
# End Source File
# Begin Source File

SOURCE=.\src\tpcc_com_ps.idl

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

# PROP Ignore_Default_Tool 1
# Begin Custom Build
InputPath=.\src\tpcc_com_ps.idl

BuildCmds= \
            midl /Oicf /h "tpcc_com_ps.h" /iid "tpcc_com_ps_i.c"
".\src\tpcc_com_ps.idl"    /out ".\src"

".\src\tpcc_com_ps.h" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_ps_i.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\dlldata.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_ps_p.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)
# End Custom Build

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

# PROP Ignore_Default_Tool 1
# Begin Custom Build
InputPath=.\src\tpcc_com_ps.idl

BuildCmds= \
            midl /Oicf /h "tpcc_com_ps.h" /iid "tpcc_com_ps_i.c"
".\src\tpcc_com_ps.idl"    /out ".\src"
```

```
".\src\tpcc_com_ps.h" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_ps_i.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\dlldata.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)

".\src\tpcc_com_ps_p.c" : $(SOURCE) "$(INTDIR)" "$(OUTDIR)"
   $(BuildCmds)
# End Custom Build

!ENDIF

# End Source File
# Begin Source File

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

SOURCE=.\src\tpcc_com_ps_p.c
# End Source File
# End Group
# End Target
# End Project
```

tpcc_com_ps/src/dlldata.c

```
/*********************************************************
   DllData file -- generated by MIDL compiler

        DO NOT ALTER THIS FILE

   This file is regenerated by MIDL on every IDL file compile.

   To completely 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 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


/* verify that the <rpcndr.h> version is high enough to compile this file*/
#ifndef __REQUIRED_RPCNDR_H_VERSION__
#define __REQUIRED_RPCNDR_H_VERSION__ 440
#endif

#include "rpc.h"
#include "rpcndr.h"

#ifndef __RPCNDR_H_VERSION__
#error this stub requires an updated version of <rpcndr.h>
#endif // __RPCNDR_H_VERSION__

#ifndef COM_NO_WINDOWS_H
#include "windows.h"
#include "ole2.h"
#endif /*COM_NO_WINDOWS_H*/

#ifndef __tpcc_com_ps_h__
#define __tpcc_com_ps_h__

/* Forward Declarations */

#ifndef __ITPCC_FWD_DEFINED__
#define __ITPCC_FWD_DEFINED__
typedef interface ITPCC ITPCC;
#endif       /* __ITPCC_FWD_DEFINED__ */


/* header files for imported files */
#include "oaidl.h"
#include "ocidl.h"

#ifdef __cplusplus
extern "C"{
#endif

void __RPC_FAR * __RPC_USER MIDL_user_allocate(size_t);
void __RPC_USER MIDL_user_free( void __RPC_FAR * );

/* interface __MIDL_itf_tpcc_com_ps_0000 */
/* [local] */



extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_ps_0000_v0_0_c_ifspec;
extern RPC_IF_HANDLE __MIDL_itf_tpcc_com_ps_0000_v0_0_s_ifspec;

#ifndef __ITPCC_INTERFACE_DEFINED__
#define __ITPCC_INTERFACE_DEFINED__

/* interface ITPCC */
/* [unique][helpstring][uuid][oleautomation][object] */


EXTERN_C const IID IID_ITPCC;

#if defined(__cplusplus) && !defined(CINTERFACE)

    MIDL_INTERFACE("FEEE6AA2-84B1-11d2-BA47-00C04FBFE08B")
    ITPCC : public IUnknown
    {
    public:
        virtual HRESULT __stdcall NewOrder(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Payment(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall Delivery(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall StockLevel(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall OrderStatus(
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out) = 0;

        virtual HRESULT __stdcall CallSetComplete( void) = 0;

    };

#else        /* C style interface */

    typedef struct ITPCCVtbl
    {
        BEGIN_INTERFACE

        HRESULT ( STDMETHODCALLTYPE __RPC_FAR *QueryInterface )(
            ITPCC __RPC_FAR * This,
            /* [in] */ REFIID riid,
            /* [iid_is][out] */ void __RPC_FAR *__RPC_FAR *ppvObject);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *AddRef )(
            ITPCC __RPC_FAR * This);

        ULONG ( STDMETHODCALLTYPE __RPC_FAR *Release )(
            ITPCC __RPC_FAR * This);

        HRESULT ( __stdcall __RPC_FAR *NewOrder )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Payment )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *Delivery )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *StockLevel )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *OrderStatus )(
            ITPCC __RPC_FAR * This,
            /* [in] */ VARIANT txn_in,
            /* [out] */ VARIANT __RPC_FAR *txn_out);

        HRESULT ( __stdcall __RPC_FAR *CallSetComplete )(
            ITPCC __RPC_FAR * This);

        END_INTERFACE
    } ITPCCVtbl;

    interface ITPCC
    {
        CONST_VTBL struct ITPCCVtbl __RPC_FAR *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 __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_NewOrder_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Payment_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_Payment_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_Delivery_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_Delivery_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);
```

```
HRESULT __stdcall ITPCC_StockLevel_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_StockLevel_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_OrderStatus_Proxy(
    ITPCC __RPC_FAR * This,
    /* [in] */ VARIANT txn_in,
    /* [out] */ VARIANT __RPC_FAR *txn_out);


void __RPC_STUB ITPCC_OrderStatus_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


HRESULT __stdcall ITPCC_CallSetComplete_Proxy(
    ITPCC __RPC_FAR * This);


void __RPC_STUB ITPCC_CallSetComplete_Stub(
    IRpcStubBuffer *This,
    IRpcChannelBuffer *_pRpcChannelBuffer,
    PRPC_MESSAGE _pRpcMessage,
    DWORD *_pdwStubPhase);


#endif      /* __ITPCC_INTERFACE_DEFINED__ */


/* Additional Prototypes for ALL interfaces */

unsigned long             __RPC_USER  VARIANT_UserSize(     unsigned long
__RPC_FAR *, unsigned long            , VARIANT __RPC_FAR * );
unsigned char __RPC_FAR * __RPC_USER  VARIANT_UserMarshal(  unsigned long
__RPC_FAR *, unsigned char __RPC_FAR *, VARIANT __RPC_FAR * );
unsigned char __RPC_FAR * __RPC_USER  VARIANT_UserUnmarshal(unsigned long
__RPC_FAR *, unsigned char __RPC_FAR *, VARIANT __RPC_FAR * );
void                      __RPC_USER  VARIANT_UserFree(     unsigned long
__RPC_FAR *, VARIANT __RPC_FAR * );

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif
```

tpcc_com_ps/src/tpcc_com_ps.idl

```
/*          FILE:                           ITPCC.IDL
 *                                                      Microsoft TPC-C Kit Ver.
4.20.000
 *                                                      Copyright Microsoft, 1999
 *              All Rights Reserved
 *
 *                                                      not yet audited
 *
 *          PURPOSE:    Defines the interface used by TPCC. This interface
can be implemented by C++ components.
 *
 *  Change history:
 *                      4.20.000 - first version
 */

// Forward declare all types defined
interface ITPCC;
import "oaidl.idl";
import "ocidl.idl";

            [
                        object,
                        oleautomation,
                        uuid(FEEE6AA2-84B1-11d2-BA47-00C04FBFE08B),
                        helpstring("ITPCC Interface"),
                        pointer_default(unique)
            ]
            interface ITPCC : IUnknown
            {

        HRESULT _stdcall NewOrder

              (

              [in] VARIANT  txn_in,

              [out] VARIANT *txn_out

              );

        HRESULT _stdcall Payment

              (

              [in] VARIANT txn_in,

              [out] VARIANT *txn_out

              );

        HRESULT _stdcall Delivery

              (

              [in] VARIANT txn_in,

              [out] VARIANT *txn_out

              );

        HRESULT _stdcall StockLevel

              (

              [in] VARIANT txn_in,

              [out] VARIANT *txn_out

              );

        HRESULT _stdcall OrderStatus

              (

              [in] VARIANT txn_in,

              [out] VARIANT *txn_out

              );

        HRESULT _stdcall CallSetComplete

              (

              );

    };      // interface ITPCC
```

tpcc_com_ps/src/tpcc_com_ps_i.c

```
#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the IIDs and CLSIDs */

/* link this file in with the server and any clients */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if !defined(_M_IA64) && !defined(_M_AXP64)

#ifdef __cplusplus
extern "C"{
#endif


#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        const type name = {l,w1,w2,{b1,b2,b3,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
IID_ITPCC,0xFEEE6AA2,0x84B1,0x11d2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



#endif /* !defined(_M_IA64) && !defined(_M_AXP64)*/


#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the IIDs and CLSIDs */

/* link this file in with the server and any clients */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext,
robust
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if defined(_M_IA64) || defined(_M_AXP64)

#ifdef __cplusplus
extern "C"{
#endif


#include <rpc.h>
#include <rpcndr.h>

#ifdef _MIDL_USE_GUIDDEF_

#ifndef INITGUID
#define INITGUID
#include <guiddef.h>
#undef INITGUID
#else
#include <guiddef.h>
#endif

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        DEFINE_GUID(name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8)

#else // !_MIDL_USE_GUIDDEF_

#ifndef __IID_DEFINED__
#define __IID_DEFINED__

typedef struct _IID
{
    unsigned long x;
    unsigned short s1;
    unsigned short s2;
    unsigned char  c[8];
} IID;

#endif // __IID_DEFINED__

#ifndef CLSID_DEFINED
#define CLSID_DEFINED
typedef IID CLSID;
#endif // CLSID_DEFINED

#define MIDL_DEFINE_GUID(type,name,l,w1,w2,b1,b2,b3,b4,b5,b6,b7,b8) \
        const type name = {l,w1,w2,{b1,b2,b3,b4,b5,b6,b7,b8}}

#endif !_MIDL_USE_GUIDDEF_

MIDL_DEFINE_GUID(IID,
IID_ITPCC,0xFEEE6AA2,0x84B1,0x11d2,0xBA,0x47,0x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



#endif /* defined(_M_IA64) || defined(_M_AXP64)*/
```

tpcc_com_ps/src/tpcc_com_ps_p.c

```
#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the proxy stub code */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run), ms_ext, c_ext
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if !defined(_M_IA64) && !defined(_M_AXP64)
#define USE_STUBLESS_PROXY


/* verify that the <rpcproxy.h> version is high enough to compile this file*/
#ifndef __REDQ_RPCPROXY_H_VERSION__
#define __REQUIRED_RPCPROXY_H_VERSION__ 440
#endif


#include "rpcproxy.h"
#ifndef __RPCPROXY_H_VERSION__
#error this stub requires an updated version of <rpcproxy.h>
#endif // __RPCPROXY_H_VERSION__


#include "tpcc_com_ps.h"

#define TYPE_FORMAT_STRING_SIZE   997
#define PROC_FORMAT_STRING_SIZE   193
#define TRANSMIT_AS_TABLE_SIZE    0
#define WIRE_MARSHAL_TABLE_SIZE   1

typedef struct _MIDL_TYPE_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ TYPE_FORMAT_STRING_SIZE ];
    } MIDL_TYPE_FORMAT_STRING;

typedef struct _MIDL_PROC_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ PROC_FORMAT_STRING_SIZE ];
    } MIDL_PROC_FORMAT_STRING;


extern const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;


/* Standard interface: __MIDL_itf_tpcc_com_ps_0000, ver. 0.0,
   GUID={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}} */


extern const MIDL_STUB_DESC Object_StubDesc;


extern const MIDL_SERVER_INFO ITPCC_ServerInfo;

#pragma code_seg(".orpc")
static const unsigned short ITPCC_FormatStringOffsetTable[] =
    {
    0,
    34,
    68,
    102,
    136,
    170
    };

static const MIDL_SERVER_INFO ITPCC_ServerInfo =
    {
    &Object_StubDesc,
    0,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0,
    0
    };

static const MIDL_STUBLESS_PROXY_INFO ITPCC_ProxyInfo =
    {
    &Object_StubDesc,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0
    };

CINTERFACE_PROXY_VTABLE(9) _ITPCCProxyVtbl =
{
    &ITPCC_ProxyInfo,
    &IID_ITPCC,
    IUnknown_QueryInterface_Proxy,
    IUnknown_AddRef_Proxy,
    IUnknown_Release_Proxy ,
    (void *)-1 /* ITPCC::NewOrder */ ,
    (void *)-1 /* ITPCC::Payment */ ,
    (void *)-1 /* ITPCC::Delivery */ ,
    (void *)-1 /* ITPCC::StockLevel */ ,
    (void *)-1 /* ITPCC::OrderStatus */ ,
    (void *)-1 /* ITPCC::CallSetComplete */
};

const CInterfaceStubVtbl _ITPCCStubVtbl =
{
    &IID_ITPCC,
    &ITPCC_ServerInfo,
    9,
    0, /* pure interpreted */
    CStdStubBuffer_METHODS
};

extern const USER_MARSHAL_ROUTINE_QUADRUPLE
UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ];

static const MIDL_STUB_DESC Object_StubDesc =
    {
    0,
    NdrOleAllocate,
    NdrOleFree,
    0,
    0,
    0,
    0,
    0,
    __MIDL_TypeFormatString.Format,
    1, /* -error bounds_check flag */
    0x20000, /* Ndr library version */
    0,
    0x5030118, /* MIDL Version 5.3.280 */
    0,
    UserMarshalRoutines,
    0,  /* notify & notify_flag routine table */
    0x1, /* MIDL flag */
    0,  /* Reserved3 */
    0,  /* Reserved4 */
    0   /* Reserved5 */
    };

#pragma data_seg(".rdata")

static const USER_MARSHAL_ROUTINE_QUADRUPLE
UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ] =
        {

            {
            VARIANT_UserSize
            ,VARIANT_UserMarshal
            ,VARIANT_UserUnmarshal
            ,VARIANT_UserFree
            }

        };


#if !defined(__RPC_WIN32__)
#error  Invalid build platform for this stub.
#endif

#if !(TARGET_IS_NT40_OR_LATER)
#error You need a Windows NT 4.0 or later to run this stub because it uses these
features:
#error   -Oif or -Oicf, [wire_marshal] or [user_marshal] attribute.
#error However, your C/C++ compilation flags indicate you intend to run this app
on earlier systems.
#error This app will die there with the RPC_X_WRONG_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 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/*  8 */    NdrFcShort( 0x1c ),         /* x86 Stack size/offset = 28 */
#else
                                        NdrFcShort( 0x20 ),         /*  MIPS
Stack size/offset = 32 */
#endif
#else
                                        NdrFcShort( 0x20 ),         /* PPC Stack
size/offset = 32 */
#endif
#else
                                        NdrFcShort( 0x28 ),         /* Alpha
Stack size/offset = 40 */
#endif
/* 10 */    NdrFcShort( 0x0 ),          /* 0 */
/* 12 */    NdrFcShort( 0x8 ),          /* 8 */
/* 14 */    0x7,                        /* Oi2 Flags:  srv must size, clt must
size, has return, */
                                        0x3,                        /* 3 */

            /* Parameter txn_in */

/* 16 */    NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 18 */    NdrFcShort( 0x4 ),          /* x86 Stack size/offset = 4 */
#else
                                        NdrFcShort( 0x8 ),          /*  MIPS
Stack size/offset = 8 */
#endif
#else
                                        NdrFcShort( 0x8 ),          /* PPC Stack
size/offset = 8 */
#endif
#else
                                        NdrFcShort( 0x8 ),          /* Alpha
Stack size/offset = 8 */
#endif
/* 20 */    NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

            /* Parameter txn_out */

/* 22 */    NdrFcShort( 0x4113 ),       /* Flags:  must size, must free, out,
simple ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 24 */    NdrFcShort( 0x14 ),         /* x86 Stack size/offset = 20 */
#else
                                        NdrFcShort( 0x18 ),         /*  MIPS
Stack size/offset = 24 */
#endif
#else
                                        NdrFcShort( 0x18 ),         /* PPC Stack
size/offset = 24 */
#endif
#else
                                        NdrFcShort( 0x18 ),         /* Alpha
Stack size/offset = 24 */
#endif
/* 26 */    NdrFcShort( 0x3da ),        /* Type Offset=986 */

            /* Return value */

/* 28 */    NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 30 */    NdrFcShort( 0x18 ),         /* x86 Stack size/offset = 24 */
#else
                                        NdrFcShort( 0x1c ),         /*  MIPS
Stack size/offset = 28 */
#endif
#else
                                        NdrFcShort( 0x1c ),         /* PPC Stack
size/offset = 28 */
#endif
#else
                                        NdrFcShort( 0x20 ),         /* Alpha
Stack size/offset = 32 */
#endif
/* 32 */    0x8,                        /* FC_LONG */
                                        0x0,                        /* 0 */

            /* Procedure Payment */

/* 34 */    0x33,                       /* FC_AUTO_HANDLE */
                                        0x6c,                       /* Old Flags:
object, Oi2 */
/* 36 */    NdrFcLong( 0x0 ),           /* 0 */
/* 40 */    NdrFcShort( 0x4 ),          /* 4 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 42 */    NdrFcShort( 0x1c ),         /* x86 Stack size/offset = 28 */
#else
                                        NdrFcShort( 0x20 ),         /*  MIPS
Stack size/offset = 32 */
#endif
#else
                                        NdrFcShort( 0x20 ),         /* PPC Stack
size/offset = 32 */
#endif
#else
                                        NdrFcShort( 0x28 ),         /* Alpha
Stack size/offset = 40 */
#endif
/* 44 */    NdrFcShort( 0x0 ),          /* 0 */
/* 46 */    NdrFcShort( 0x8 ),          /* 8 */
/* 48 */    0x7,                        /* Oi2 Flags:  srv must size, clt must
size, has return, */
                                        0x3,                        /* 3 */

            /* Parameter txn_in */

/* 50 */    NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 52 */    NdrFcShort( 0x4 ),          /* x86 Stack size/offset = 4 */
#else
                                        NdrFcShort( 0x8 ),          /*  MIPS
Stack size/offset = 8 */
#endif
```

```
#else                                   NdrFcShort( 0x8 ),      /* PPC Stack
size/offset = 8 */
#endif
#else                                   NdrFcShort( 0x8 ),      /* Alpha
Stack size/offset = 8 */
#endif
/* 54 */    NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

            /* Parameter txn_out */

/* 56 */    NdrFcShort( 0x4113 ),       /* Flags:  must size, must free, out,
simple_ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 58 */    NdrFcShort( 0x14 ),         /* x86 Stack size/offset = 20 */
#else                                   NdrFcShort( 0x18 ),     /*  MIPS
Stack size/offset = 24 */
#endif
#else                                   NdrFcShort( 0x18 ),     /* PPC Stack
size/offset = 24 */
#endif
#else                                   NdrFcShort( 0x18 ),     /* Alpha
Stack size/offset = 24 */
#endif
/* 60 */    NdrFcShort( 0x3da ),        /* Type Offset=986 */

            /* Return value */

/* 62 */    NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 64 */    NdrFcShort( 0x18 ),         /* x86 Stack size/offset = 24 */
#else                                   NdrFcShort( 0x1c ),     /*  MIPS
Stack size/offset = 28 */
#endif
#else                                   NdrFcShort( 0x1c ),     /* PPC Stack
size/offset = 28 */
#endif
#else                                   NdrFcShort( 0x20 ),     /* Alpha
Stack size/offset = 32 */
#endif
/* 66 */    0x8,                        /* FC_LONG */
                                        0x0,                    /* 0 */

            /* Procedure Delivery */

/* 68 */    0x33,                       /* FC_AUTO_HANDLE */
                                        0x6c,                   /* Old Flags:
object, Oi2 */
/* 70 */    NdrFcLong( 0x0 ),           /* 0 */
/* 74 */    NdrFcShort( 0x5 ),          /* 5 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 76 */    NdrFcShort( 0x1c ),         /* x86 Stack size/offset = 28 */
#else                                   NdrFcShort( 0x20 ),     /*  MIPS
Stack size/offset = 32 */
#endif
#else                                   NdrFcShort( 0x20 ),     /* PPC Stack
size/offset = 32 */
#endif
#else                                   NdrFcShort( 0x28 ),     /* Alpha
Stack size/offset = 40 */
#endif
/* 78 */    NdrFcShort( 0x0 ),          /* 0 */
/* 80 */    NdrFcShort( 0x8 ),          /* 8 */
/* 82 */    0x7,                        /* Oi2 Flags:  srv must size, clt must
size, has return, */
                                        0x3,                    /* 3 */

            /* Parameter txn_in */

/* 84 */    NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 86 */    NdrFcShort( 0x4 ),          /* x86 Stack size/offset = 4 */
#else                                   NdrFcShort( 0x8 ),      /*  MIPS
Stack size/offset = 8 */
#endif
#else                                   NdrFcShort( 0x8 ),      /* PPC Stack
size/offset = 8 */
#endif
#else                                   NdrFcShort( 0x8 ),      /* Alpha
Stack size/offset = 8 */
#endif
/* 88 */    NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

            /* Parameter txn_out */

/* 90 */    NdrFcShort( 0x4113 ),       /* Flags:  must size, must free, out,
simple_ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 92 */    NdrFcShort( 0x14 ),         /* x86 Stack size/offset = 20 */
#else                                   NdrFcShort( 0x18 ),     /*  MIPS
Stack size/offset = 24 */
#endif
#else                                   NdrFcShort( 0x18 ),     /* PPC Stack
size/offset = 24 */
#endif
#else                                   NdrFcShort( 0x18 ),     /* Alpha
Stack size/offset = 24 */
#endif
/* 94 */    NdrFcShort( 0x3da ),        /* Type Offset=986 */

            /* Return value */

/* 96 */    NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 98 */    NdrFcShort( 0x18 ),         /* x86 Stack size/offset = 24 */
#else                                   NdrFcShort( 0x1c ),     /*  MIPS
Stack size/offset = 28 */
#endif
#else                                   NdrFcShort( 0x1c ),     /* PPC Stack
size/offset = 28 */
#endif
#else                                   NdrFcShort( 0x20 ),     /* Alpha
Stack size/offset = 32 */
#endif
/* 100 */   0x8,                        /* FC_LONG */
                                        0x0,                    /* 0 */

            /* Procedure StockLevel */

/* 102 */   0x33,                       /* FC_AUTO_HANDLE */
                                        0x6c,                   /* Old Flags:
object, Oi2 */
/* 104 */   NdrFcLong( 0x0 ),           /* 0 */
/* 108 */   NdrFcShort( 0x6 ),          /* 6 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 110 */   NdrFcShort( 0x1c ),         /* x86 Stack size/offset = 28 */
#else                                   NdrFcShort( 0x20 ),     /*  MIPS
Stack size/offset = 32 */
#endif
#else                                   NdrFcShort( 0x20 ),     /* PPC Stack
size/offset = 32 */
#endif
#else                                   NdrFcShort( 0x28 ),     /* Alpha
Stack size/offset = 40 */
#endif
/* 112 */   NdrFcShort( 0x0 ),          /* 0 */
/* 114 */   NdrFcShort( 0x8 ),          /* 8 */
/* 116 */   0x7,                        /* Oi2 Flags:  srv must size, clt must
size, has return, */
                                        0x3,                    /* 3 */

            /* Parameter txn_in */

/* 118 */   NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 120 */   NdrFcShort( 0x4 ),          /* x86 Stack size/offset = 4 */
#else                                   NdrFcShort( 0x8 ),      /*  MIPS
Stack size/offset = 8 */
#endif
#else                                   NdrFcShort( 0x8 ),      /* PPC Stack
size/offset = 8 */
#endif
#else                                   NdrFcShort( 0x8 ),      /* Alpha
Stack size/offset = 8 */
#endif
/* 122 */   NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

            /* Parameter txn_out */

/* 124 */   NdrFcShort( 0x4113 ),       /* Flags:  must size, must free, out,
simple_ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 126 */   NdrFcShort( 0x14 ),         /* x86 Stack size/offset = 20 */
#else                                   NdrFcShort( 0x18 ),     /*  MIPS
Stack size/offset = 24 */
#endif
#else                                   NdrFcShort( 0x18 ),     /* PPC Stack
size/offset = 24 */
#endif
#else                                   NdrFcShort( 0x18 ),     /* Alpha
Stack size/offset = 24 */
#endif
/* 128 */   NdrFcShort( 0x3da ),        /* Type Offset=986 */

            /* Return value */

/* 130 */   NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 132 */   NdrFcShort( 0x18 ),         /* x86 Stack size/offset = 24 */
#else                                   NdrFcShort( 0x1c ),     /*  MIPS
Stack size/offset = 28 */
#endif
#else                                   NdrFcShort( 0x1c ),     /* PPC Stack
size/offset = 28 */
#endif
#else                                   NdrFcShort( 0x20 ),     /* Alpha
Stack size/offset = 32 */
#endif
/* 134 */   0x8,                        /* FC_LONG */
                                        0x0,                    /* 0 */

            /* Procedure OrderStatus */

/* 136 */   0x33,                       /* FC_AUTO_HANDLE */
                                        0x6c,                   /* Old Flags:
object, Oi2 */
/* 138 */   NdrFcLong( 0x0 ),           /* 0 */
/* 142 */   NdrFcShort( 0x7 ),          /* 7 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 144 */   NdrFcShort( 0x1c ),         /* x86 Stack size/offset = 28 */
#else                                   NdrFcShort( 0x20 ),     /*  MIPS
Stack size/offset = 32 */
#endif
#else                                   NdrFcShort( 0x20 ),     /* PPC Stack
size/offset = 32 */
#endif
#else                                   NdrFcShort( 0x28 ),     /* Alpha
Stack size/offset = 40 */
#endif
/* 146 */   NdrFcShort( 0x0 ),          /* 0 */
/* 148 */   NdrFcShort( 0x8 ),          /* 8 */
/* 150 */   0x7,                        /* Oi2 Flags:  srv must size, clt must
size, has return, */
                                        0x3,                    /* 3 */

            /* Parameter txn_in */

/* 152 */   NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 154 */   NdrFcShort( 0x4 ),          /* x86 Stack size/offset = 4 */
#else                                   NdrFcShort( 0x8 ),      /*  MIPS
Stack size/offset = 8 */
#endif
#else                                   NdrFcShort( 0x8 ),      /* PPC Stack
size/offset = 8 */
#endif
#else                                   NdrFcShort( 0x8 ),      /* Alpha
Stack size/offset = 8 */
#endif
/* 156 */   NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

            /* Parameter txn_out */

/* 158 */   NdrFcShort( 0x4113 ),       /* Flags:  must size, must free, out,
simple_ref, srv alloc size=16 */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 160 */   NdrFcShort( 0x14 ),         /* x86 Stack size/offset = 20 */
#else                                   NdrFcShort( 0x18 ),     /*  MIPS
Stack size/offset = 24 */
#endif
#else                                   NdrFcShort( 0x18 ),     /* PPC Stack
size/offset = 24 */
#endif
#else                                   NdrFcShort( 0x18 ),     /* Alpha
Stack size/offset = 24 */
#endif
/* 162 */   NdrFcShort( 0x3da ),        /* Type Offset=986 */

            /* Return value */

/* 164 */   NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
#ifndef _PPC_
#if !defined(_MIPS_)
/* 166 */   NdrFcShort( 0x18 ),         /* x86 Stack size/offset = 24 */
#else                                   NdrFcShort( 0x1c ),     /*  MIPS
Stack size/offset = 28 */
#endif
#else                                   NdrFcShort( 0x1c ),     /* PPC Stack
size/offset = 28 */
#endif
#else                                   NdrFcShort( 0x20 ),     /* Alpha
Stack size/offset = 32 */
#endif
```

```
/* 168 */    0x8,                        /* FC_LONG */
             0x0,                        /* 0 */

             /* Procedure CallSetComplete */

/* 170 */    0x33,                       /* FC_AUTO_HANDLE */
             0x6c,                       /* Old Flags:
object, Oi2 */
/* 172 */    NdrFcLong( 0x0 ),           /* 0 */
/* 176 */    NdrFcShort( 0x8 ),          /* 8 */
#ifndef _ALPHA_
/* 178 */    NdrFcShort( 0x8 ),          /* x86, MIPS, PPC Stack size/offset = 8
*/
#else
                                         NdrFcShort( 0x10 ),         /* Alpha
Stack size/offset = 16 */
#endif
/* 180 */    NdrFcShort( 0x0 ),          /* 0 */
/* 182 */    NdrFcShort( 0x8 ),          /* 8 */
/* 184 */    0x4,                        /* Oi2 Flags:  has return, */
             0x1,                        /* 1 */

             /* Return value */

/* 186 */    NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 188 */    NdrFcShort( 0x4 ),          /* x86, MIPS, PPC Stack size/offset = 4
*/
#else
                                         NdrFcShort( 0x8 ),          /* Alpha
Stack size/offset = 8 */
#endif
/* 190 */    0x8,                        /* FC_LONG */
             0x0,                        /* 0 */

             0x0
        }
    };

static const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString =
    {
        0,
        {
                                         NdrFcShort( 0x0 ),          /* 0 */
/*  2 */
                                         0x12, 0x0,    /* FC_UP */
/*  4 */     NdrFcShort( 0x3b0 ),        /* Offset= 944 (948) */
/*  6 */
                                         0x2b,                       /*
FC_NON_ENCAPSULATED_UNION */
                                         0x9,                        /* FC_ULONG
*/
/*  8 */     0x7,                        /* Corr desc: FC_USHORT */
             0x0,                                                    /*  */
/* 10 */     NdrFcShort( 0xfff8 ),       /* -8 */
/* 12 */     NdrFcShort( 0x2 ),          /* Offset= 2 (14) */
/* 14 */     NdrFcShort( 0x10 ),         /* 16 */
/* 16 */     NdrFcShort( 0x2b ),         /* 43 */
/* 18 */     NdrFcLong( 0x3 ),           /* 3 */
/* 22 */     NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 24 */     NdrFcLong( 0x11 ),          /* 17 */
/* 28 */     NdrFcShort( 0x8001 ),       /* Simple arm type: FC_BYTE */
/* 30 */     NdrFcLong( 0x2 ),           /* 2 */
/* 34 */     NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 36 */     NdrFcLong( 0x4 ),           /* 4 */
/* 40 */     NdrFcShort( 0x800a ),       /* Simple arm type: FC_FLOAT */
/* 42 */     NdrFcLong( 0x5 ),           /* 5 */
/* 46 */     NdrFcShort( 0x800c ),       /* Simple arm type: FC_DOUBLE */
/* 48 */     NdrFcLong( 0xb ),           /* 11 */
/* 52 */     NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 54 */     NdrFcLong( 0xa ),           /* 10 */
/* 58 */     NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 60 */     NdrFcLong( 0x6 ),           /* 6 */
/* 64 */     NdrFcShort( 0xd6 ),         /* Offset= 214 (278) */
/* 66 */     NdrFcLong( 0x7 ),           /* 7 */
/* 70 */     NdrFcShort( 0x800c ),       /* Simple arm type: FC_DOUBLE */
/* 72 */     NdrFcLong( 0x8 ),           /* 8 */
/* 76 */     NdrFcShort( 0xd0 ),         /* Offset= 208 (284) */
/* 78 */     NdrFcLong( 0xd ),           /* 13 */
/* 82 */     NdrFcShort( 0xe2 ),         /* Offset= 226 (308) */
/* 84 */     NdrFcLong( 0x9 ),           /* 9 */
/* 88 */     NdrFcShort( 0xee ),         /* Offset= 238 (326) */
/* 90 */     NdrFcLong( 0x2000 ),        /* 8192 */
/* 94 */     NdrFcShort( 0xfa ),         /* Offset= 250 (344) */
/* 96 */     NdrFcLong( 0x24 ),          /* 36 */
/* 100 */    NdrFcShort( 0x308 ),        /* Offset= 776 (876) */
/* 102 */    NdrFcLong( 0x4024 ),        /* 16420 */
/* 106 */    NdrFcShort( 0x302 ),        /* Offset= 770 (876) */
/* 108 */    NdrFcLong( 0x4011 ),        /* 16401 */
/* 112 */    NdrFcShort( 0x300 ),        /* Offset= 768 (880) */
/* 114 */    NdrFcLong( 0x4002 ),        /* 16386 */
/* 118 */    NdrFcShort( 0x2fe ),        /* Offset= 766 (884) */
/* 120 */    NdrFcLong( 0x4003 ),        /* 16387 */
/* 124 */    NdrFcShort( 0x2fc ),        /* Offset= 764 (888) */
/* 126 */    NdrFcLong( 0x4004 ),        /* 16388 */
/* 130 */    NdrFcShort( 0x2fa ),        /* Offset= 762 (892) */
/* 132 */    NdrFcLong( 0x4005 ),        /* 16389 */
/* 136 */    NdrFcShort( 0x2f8 ),        /* Offset= 760 (896) */
/* 138 */    NdrFcLong( 0x400b ),        /* 16395 */
/* 142 */    NdrFcShort( 0x2e6 ),        /* Offset= 742 (884) */
/* 144 */    NdrFcLong( 0x400a ),        /* 16394 */
/* 148 */    NdrFcShort( 0x2e4 ),        /* Offset= 740 (888) */
/* 150 */    NdrFcLong( 0x4006 ),        /* 16390 */
/* 154 */    NdrFcShort( 0x2ea ),        /* Offset= 746 (900) */
/* 156 */    NdrFcLong( 0x4007 ),        /* 16391 */
/* 160 */    NdrFcShort( 0x2e0 ),        /* Offset= 736 (896) */
/* 162 */    NdrFcLong( 0x4008 ),        /* 16392 */
/* 166 */    NdrFcShort( 0x2e2 ),        /* Offset= 738 (904) */
/* 168 */    NdrFcLong( 0x400d ),        /* 16397 */
/* 172 */    NdrFcShort( 0x2e0 ),        /* Offset= 736 (908) */
/* 174 */    NdrFcLong( 0x4009 ),        /* 16393 */
/* 178 */    NdrFcShort( 0x2de ),        /* Offset= 734 (912) */
/* 180 */    NdrFcLong( 0x6000 ),        /* 24576 */
/* 184 */    NdrFcShort( 0x2dc ),        /* Offset= 732 (916) */
/* 186 */    NdrFcLong( 0x400c ),        /* 16396 */
/* 190 */    NdrFcShort( 0x2da ),        /* Offset= 730 (920) */
/* 192 */    NdrFcLong( 0x10 ),          /* 16 */
/* 196 */    NdrFcShort( 0x8002 ),       /* Simple arm type: FC_CHAR */
/* 198 */    NdrFcLong( 0x12 ),          /* 18 */
/* 202 */    NdrFcShort( 0x8006 ),       /* Simple arm type: FC_SHORT */
/* 204 */    NdrFcLong( 0x13 ),          /* 19 */
/* 208 */    NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 210 */    NdrFcLong( 0x16 ),          /* 22 */
/* 214 */    NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 216 */    NdrFcLong( 0x17 ),          /* 23 */
/* 220 */    NdrFcShort( 0x8008 ),       /* Simple arm type: FC_LONG */
/* 222 */    NdrFcLong( 0xe ),           /* 14 */
/* 226 */    NdrFcShort( 0x2be ),        /* Offset= 702 (928) */
/* 228 */    NdrFcLong( 0x400e ),        /* 16398 */
/* 232 */    NdrFcShort( 0x2c4 ),        /* Offset= 708 (940) */
/* 234 */    NdrFcLong( 0x4010 ),        /* 16400 */
/* 238 */    NdrFcShort( 0x2c2 ),        /* Offset= 706 (944) */
/* 240 */    NdrFcLong( 0x4012 ),        /* 16402 */
/* 244 */    NdrFcShort( 0x280 ),        /* Offset= 640 (884) */
/* 246 */    NdrFcLong( 0x4013 ),        /* 16403 */
/* 250 */    NdrFcShort( 0x27e ),        /* Offset= 638 (888) */
/* 252 */    NdrFcLong( 0x4016 ),        /* 16406 */
/* 256 */    NdrFcShort( 0x278 ),        /* Offset= 632 (888) */
/* 258 */    NdrFcLong( 0x4017 ),        /* 16407 */
/* 262 */    NdrFcShort( 0x272 ),        /* Offset= 626 (888) */
/* 264 */    NdrFcLong( 0x0 ),           /* 0 */
/* 268 */    NdrFcShort( 0x0 ),          /* Offset= 0 (268) */
/* 270 */    NdrFcLong( 0x1 ),           /* 1 */
/* 274 */    NdrFcShort( 0x0 ),          /* Offset= 0 (274) */
/* 276 */    NdrFcShort( 0xffffffff ),   /* Offset= -1 (275) */
/* 278 */
                                         0x15,                       /* FC_STRUCT
*/
                                         0x7,                        /* 7 */
/* 280 */    NdrFcShort( 0x8 ),          /* 8 */
/* 282 */    0xb,                        /* FC_HYPER */
                                         0x5b,                       /* FC_END */
/* 284 */
                                         0x12, 0x0,    /* FC_UP */
/* 286 */    NdrFcShort( 0xc ),          /* Offset= 12 (298) */
/* 288 */
                                         0x1b,                       /* FC_CARRAY
*/
                                         0x1,                        /* 1 */
/* 290 */    NdrFcShort( 0x2 ),          /* 2 */
/* 292 */    0x9,                        /* Corr desc: FC_ULONG */
             0x0,                                                    /*  */
/* 294 */    NdrFcShort( 0xfffc ),       /* -4 */
/* 296 */    0x6,                        /* FC_SHORT */
                                         0x5b,                       /* FC_END */
/* 298 */
                                         0x17,                       /* FC_CSTRUCT
*/
                                         0x3,                        /* 3 */
/* 300 */    NdrFcShort( 0x8 ),          /* 8 */
/* 302 */    NdrFcShort( 0xfffffff2 ),   /* Offset= -14 (288) */
/* 304 */    0x8,                        /* FC_LONG */
                                         0x8,                        /* FC_LONG */
/* 306 */    0x5c,                       /* FC_PAD */
                                         0x5b,                       /* FC_END */
/* 308 */
                                         0x2f,                       /* FC_IP */
                                         0x5a,                       /*
FC_CONSTANT_IID */
/* 310 */    NdrFcLong( 0x0 ),           /* 0 */
/* 314 */    NdrFcShort( 0x0 ),          /* 0 */
/* 316 */    NdrFcShort( 0x0 ),          /* 0 */
/* 318 */    0xc0,                       /* 192 */
             0x0,                                                    /* 0 */
/* 320 */    0x0,                        /* 0 */
             0x0,                                                    /* 0 */
/* 322 */    0x0,                        /* 0 */
             0x0,                                                    /* 0 */
/* 324 */    0x0,                        /* 0 */
             0x46,                                                   /* 70 */
/* 326 */
                                         0x2f,                       /* FC_IP */
                                         0x5a,                       /*
FC_CONSTANT_IID */
/* 328 */    NdrFcLong( 0x20400 ),       /* 132096 */
/* 332 */    NdrFcShort( 0x0 ),          /* 0 */
/* 334 */    NdrFcShort( 0x0 ),          /* 0 */
/* 336 */    0xc0,                       /* 192 */
             0x0,                                                    /* 0 */
/* 338 */    0x0,                        /* 0 */
             0x0,                                                    /* 0 */
/* 340 */    0x0,                        /* 0 */
             0x0,                                                    /* 0 */
/* 342 */    0x0,                        /* 0 */
             0x46,                                                   /* 70 */
/* 344 */
                                         0x12, 0x10,  /* FC_UP [pointer_deref]
*/
/* 346 */    NdrFcShort( 0x2 ),          /* Offset= 2 (348) */
/* 348 */
                                         0x12, 0x0,    /* FC_UP */
/* 350 */    NdrFcShort( 0x1fc ),        /* Offset= 508 (858) */
/* 352 */
                                         0x2a,                       /*
FC_ENCAPSULATED_UNION */
                                         0x49,                       /* 73 */
/* 354 */    NdrFcShort( 0x18 ),         /* 24 */
/* 356 */    NdrFcShort( 0xa ),          /* 10 */
/* 358 */    NdrFcLong( 0x8 ),           /* 8 */
/* 362 */    NdrFcShort( 0x58 ),         /* Offset= 88 (450) */
/* 364 */    NdrFcLong( 0xd ),           /* 13 */
/* 368 */    NdrFcShort( 0x78 ),         /* Offset= 120 (488) */
/* 370 */    NdrFcLong( 0x9 ),           /* 9 */
/* 374 */    NdrFcShort( 0x94 ),         /* Offset= 148 (522) */
/* 376 */    NdrFcLong( 0xc ),           /* 12 */
/* 380 */    NdrFcShort( 0xbc ),         /* Offset= 188 (568) */
/* 382 */    NdrFcLong( 0x24 ),          /* 36 */
/* 386 */    NdrFcShort( 0x114 ),        /* Offset= 276 (662) */
/* 388 */    NdrFcLong( 0x800d ),        /* 32781 */
/* 392 */    NdrFcShort( 0x130 ),        /* Offset= 304 (696) */
/* 394 */    NdrFcLong( 0x10 ),          /* 16 */
/* 398 */    NdrFcShort( 0x148 ),        /* Offset= 328 (726) */
/* 400 */    NdrFcLong( 0x2 ),           /* 2 */
/* 404 */    NdrFcShort( 0x160 ),        /* Offset= 352 (756) */
/* 406 */    NdrFcLong( 0x3 ),           /* 3 */
/* 410 */    NdrFcShort( 0x178 ),        /* Offset= 376 (786) */
/* 412 */    NdrFcLong( 0x14 ),          /* 20 */
/* 416 */    NdrFcShort( 0x190 ),        /* Offset= 400 (816) */
/* 418 */    NdrFcShort( 0xffffffff ),   /* Offset= -1 (417) */
/* 420 */
                                         0x1b,                       /* FC_CARRAY
*/
                                         0x3,                        /* 3 */
/* 422 */    NdrFcShort( 0x4 ),          /* 4 */
/* 424 */    0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
                                         0x0,                        /*  */
/* 426 */    NdrFcShort( 0x0 ),          /* 0 */
/* 428 */
                                         0x4b,                       /* FC_PP */
                                         0x5c,                       /* FC_PAD */
/* 430 */
                                         0x48,                       /*
FC_VARIABLE_REPEAT */
                                         0x49,                       /*
FC_FIXED_OFFSET */
/* 432 */    NdrFcShort( 0x4 ),          /* 4 */
/* 434 */    NdrFcShort( 0x0 ),          /* 0 */
/* 436 */    NdrFcShort( 0x1 ),          /* 1 */
/* 438 */    NdrFcShort( 0x0 ),          /* 0 */
/* 440 */    NdrFcShort( 0x0 ),          /* 0 */
/* 442 */    0x12, 0x0,    /* FC_UP */
/* 444 */    NdrFcShort( 0xffffff6e ),   /* Offset= -146 (298) */
/* 446 */
                                         0x5b,                       /* FC_END */
                                         0x8,                        /* FC_LONG */
/* 448 */    0x5c,                       /* FC_PAD */
                                         0x5b,                       /* FC_END */
/* 450 */
                                         0x16,                       /* FC_PSTRUCT
*/
                                         0x3,                        /* 3 */
/* 452 */    NdrFcShort( 0x8 ),          /* 8 */
/* 454 */
                                         0x4b,                       /* FC_PP */
                                         0x5c,                       /* FC_PAD */
/* 456 */
                                         0x46,                       /*
FC_NO_REPEAT */
                                         0x5c,                       /* FC_PAD */
/* 458 */    NdrFcShort( 0x4 ),          /* 4 */
/* 460 */    NdrFcShort( 0x4 ),          /* 4 */
/* 462 */    0x11, 0x0,    /* FC_RP */
/* 464 */    NdrFcShort( 0xffffffd4 ),   /* Offset= -44 (420) */
/* 466 */
                                         0x5b,                       /* FC_END */
                                         0x8,                        /* FC_LONG */
/* 468 */    0x8,                        /* FC_LONG */
                                         0x5b,                       /* FC_END */
/* 470 */
                                         0x21,                       /*
FC_BOGUS_ARRAY */
                                         0x3,                        /* 3 */
/* 472 */    NdrFcShort( 0x0 ),          /* 0 */
/* 474 */    0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
                                         0x0,                        /*  */
/* 476 */    NdrFcShort( 0x0 ),          /* 0 */
/* 478 */    NdrFcLong( 0xffffffff ),    /* -1 */
/* 482 */    0x4c,                       /* FC_EMBEDDED_COMPLEX */
             0x0,                                                    /* 0 */
/* 484 */    NdrFcShort( 0xffffff50 ),   /* Offset= -176 (308) */
/* 486 */    0x5c,                       /* FC_PAD */
                                         0x5b,                       /* FC_END */
/* 488 */
                                         0x1a,                       /*
FC_BOGUS_STRUCT */
                                         0x3,                        /* 3 */
/* 490 */    NdrFcShort( 0x8 ),          /* 8 */
/* 492 */    NdrFcShort( 0x0 ),          /* 0 */
/* 494 */    NdrFcShort( 0x6 ),          /* Offset= 6 (500) */
/* 496 */    0x8,                        /* FC_LONG */
                                         0x36,                       /* FC_POINTER
*/
/* 498 */    0x5c,                       /* FC_PAD */
                                         0x5b,                       /* FC_END */
/* 500 */
                                         0x11, 0x0,    /* FC_RP */
/* 502 */    NdrFcShort( 0xfffffe0 ),    /* Offset= -32 (470) */
/* 504 */
                                         0x21,                       /*
FC_BOGUS_ARRAY */
                                         0x3,                        /* 3 */
/* 506 */    NdrFcShort( 0x0 ),          /* 0 */
/* 508 */    0x19,                       /* Corr desc:  field pointer, FC_ULONG
*/
                                         0x0,                        /*  */
/* 510 */    NdrFcShort( 0x0 ),          /* 0 */
/* 512 */    NdrFcLong( 0xffffffff ),    /* -1 */
/* 516 */    0x4c,                       /* FC_EMBEDDED_COMPLEX */
             0x0,                                                    /* 0 */
/* 518 */    NdrFcShort( 0xffffff40 ),   /* Offset= -192 (326) */
/* 520 */    0x5c,                       /* FC_PAD */
                                         0x5b,                       /* FC_END */
```

```
/* 522 */                                       0x1a,                   /*
FC_BOGUS_STRUCT */
                                                0x3,                    /* 3 */
/* 524 */     NdrFcShort( 0x8 ),                /* 8 */
/* 526 */     NdrFcShort( 0x0 ),                /* 0 */
/* 528 */     NdrFcShort( 0x6 ),                /* Offset= 6 (534) */
/* 530 */     0x8,                              /* FC_LONG */
                                                0x36,                   /* FC_POINTER
*/
/* 532 */     0x5c,                             /* FC_PAD */
                                                0x5b,                   /* FC_END */
/* 534 */
                                                0x11, 0x0,    /* FC_RP */
/* 536 */     NdrFcShort( 0xffffffe0 ),         /* Offset= -32 (504) */
/* 538 */
                                                0x1b,                   /* FC_CARRAY
*/
                                                0x3,                    /* 3 */
/* 540 */     NdrFcShort( 0x4 ),                /* 4 */
/* 542 */     0x19,                             /* Corr desc:  field pointer, FC_ULONG
*/
                                                0x0,                    /*  */
/* 544 */     NdrFcShort( 0x0 ),                /* 0 */
/* 546 */
                                                0x4b,                   /* FC_PP */
                                                0x5c,                   /* FC_PAD */
/* 548 */
                                                0x48,                   /*
FC_VARIABLE_REPEAT */
                                                0x49,                   /*
FC_FIXED_OFFSET */
/* 550 */     NdrFcShort( 0x4 ),                /* 4 */
/* 552 */     NdrFcShort( 0x0 ),                /* 0 */
/* 554 */     NdrFcShort( 0x1 ),                /* 1 */
/* 556 */     NdrFcShort( 0x0 ),                /* 0 */
/* 558 */     NdrFcShort( 0x0 ),                /* 0 */
/* 560 */     0x12, 0x0,    /* FC_UP */
/* 562 */     NdrFcShort( 0x182 ),              /* Offset= 386 (948) */
/* 564 */
                                                0x5b,                   /* FC_END */
                                                0x8,                    /* FC_LONG */
/* 566 */     0x5c,                             /* FC_PAD */
                                                0x5b,                   /* FC_END */
/* 568 */
                                                0x1a,                   /*
FC_BOGUS_STRUCT */
                                                0x3,                    /* 3 */
/* 570 */     NdrFcShort( 0x8 ),                /* 8 */
/* 572 */     NdrFcShort( 0x0 ),                /* 0 */
/* 574 */     NdrFcShort( 0x6 ),                /* Offset= 6 (580) */
/* 576 */     0x8,                              /* FC_LONG */
                                                0x36,                   /* FC_POINTER
*/
/* 578 */     0x5c,                             /* FC_PAD */
                                                0x5b,                   /* FC_END */
/* 580 */
                                                0x11, 0x0,    /* FC_RP */
/* 582 */     NdrFcShort( 0xfffffffd ),         /* Offset= -44 (538) */
/* 584 */
                                                0x2f,                   /* FC_IP */
                                                0x5a,                   /*
FC_CONSTANT_IID */
/* 586 */     NdrFcLong( 0x2f ),                /* 47 */
/* 590 */     NdrFcShort( 0x0 ),                /* 0 */
/* 592 */     NdrFcShort( 0x0 ),                /* 0 */
/* 594 */     0xc0,                             /* 192 */
                                                0x0,                    /* 0 */
/* 596 */     0x0,                              /* 0 */
                                                0x0,                    /* 0 */
/* 598 */     0x0,                              /* 0 */
                                                0x0,                    /* 0 */
/* 600 */     0x0,                              /* 0 */
                                                0x46,                   /* 70 */
/* 602 */
                                                0x1b,                   /* FC_CARRAY
*/
                                                0x0,                    /* 0 */
/* 604 */     NdrFcShort( 0x1 ),                /* 1 */
/* 606 */     0x19,                             /* Corr desc:  field pointer, FC_ULONG
*/
                                                0x0,                    /*  */
/* 608 */     NdrFcShort( 0x4 ),                /* 4 */
/* 610 */     0x1,                              /* FC_BYTE */
                                                0x5b,                   /* FC_END */
/* 612 */
                                                0x1a,                   /*
FC_BOGUS_STRUCT */
                                                0x3,                    /* 3 */
/* 614 */     NdrFcShort( 0x10 ),               /* 16 */
/* 616 */     NdrFcShort( 0x0 ),                /* 0 */
/* 618 */     NdrFcShort( 0xa ),                /* Offset= 10 (628) */
/* 620 */     0x8,                              /* FC_LONG */
                                                0x8,                    /* FC_LONG */
/* 622 */     0x4c,                             /* FC_EMBEDDED_COMPLEX */
                                                0x0,                    /* 0 */
/* 624 */     NdrFcShort( 0xffffffd8 ),         /* Offset= -40 (584) */
/* 626 */     0x36,                             /* FC_POINTER */
                                                0x5b,                   /* FC_END */
/* 628 */
                                                0x12, 0x0,    /* FC_UP */
/* 630 */     NdrFcShort( 0xffffffe4 ),         /* Offset= -28 (602) */
/* 632 */
                                                0x1b,                   /* FC_CARRAY
*/
                                                0x3,                    /* 3 */
/* 634 */     NdrFcShort( 0x4 ),                /* 4 */
/* 636 */     0x19,                             /* Corr desc:  field pointer, FC_ULONG
*/
                                                0x0,                    /*  */
/* 638 */     NdrFcShort( 0x0 ),                /* 0 */
/* 640 */
                                                0x4b,                   /* FC_PP */
                                                0x5c,                   /* FC_PAD */
/* 642 */
                                                0x48,                   /*
FC_VARIABLE_REPEAT */
                                                0x49,                   /*
FC_FIXED_OFFSET */
/* 644 */     NdrFcShort( 0x4 ),                /* 4 */
/* 646 */     NdrFcShort( 0x0 ),                /* 0 */
/* 648 */     NdrFcShort( 0x1 ),                /* 1 */
/* 650 */     NdrFcShort( 0x0 ),                /* 0 */
/* 652 */     NdrFcShort( 0x0 ),                /* 0 */
/* 654 */     0x12, 0x0,    /* FC_UP */
/* 656 */     NdrFcShort( 0xfffffffd4 ),        /* Offset= -44 (612) */
/* 658 */
                                                0x5b,                   /* FC_END */
                                                0x8,                    /* FC_LONG */
/* 660 */     0x5c,                             /* FC_PAD */
                                                0x5b,                   /* FC_END */
/* 662 */
                                                0x1a,                   /*
FC_BOGUS_STRUCT */
                                                0x3,                    /* 3 */
/* 664 */     NdrFcShort( 0x8 ),                /* 8 */
/* 666 */     NdrFcShort( 0x0 ),                /* 0 */
/* 668 */     NdrFcShort( 0x6 ),                /* Offset= 6 (674) */
/* 670 */     0x8,                              /* FC_LONG */
                                                0x36,                   /* FC_POINTER
*/
/* 672 */     0x5c,                             /* FC_PAD */
                                                0x5b,                   /* FC_END */
/* 674 */
                                                0x11, 0x0,    /* FC_RP */
/* 676 */     NdrFcShort( 0xfffffffd4 ),        /* Offset= -44 (632) */
/* 678 */
                                                0x1d,                   /*
FC_SMFARRAY */
                                                0x0,                    /* 0 */
/* 680 */     NdrFcShort( 0x8 ),                /* 8 */
/* 682 */     0x1,                              /* FC_BYTE */
                                                0x5b,                   /* FC_END */
/* 684 */
                                                0x15,                   /* FC_STRUCT
*/
                                                0x3,                    /* 3 */
/* 686 */     NdrFcShort( 0x10 ),               /* 16 */
/* 688 */     0x8,                              /* FC_LONG */
                                                0x6,                    /* FC_SHORT
*/
/* 690 */     0x6,                              /* FC_SHORT */
                                                0x4c,                   /*
FC_EMBEDDED_COMPLEX */
/* 692 */     0x0,                              /* 0 */
                                                NdrFcShort( 0xfffffff1 ),  /* Offset= -
15 (678) */
                                                0x5b,                   /* FC_END */
/* 696 */
                                                0x1a,                   /*
FC_BOGUS_STRUCT */
                                                0x3,                    /* 3 */
/* 698 */     NdrFcShort( 0x18 ),               /* 24 */
/* 700 */     NdrFcShort( 0x0 ),                /* 0 */
/* 702 */     NdrFcShort( 0xa ),                /* Offset= 10 (712) */
/* 704 */     0x8,                              /* FC_LONG */
                                                0x36,                   /* FC_POINTER
*/
/* 706 */     0x4c,                             /* FC_EMBEDDED_COMPLEX */
                                                0x0,                    /* 0 */
/* 708 */     NdrFcShort( 0xffffffe8 ),         /* Offset= -24 (684) */
/* 710 */     0x5c,                             /* FC_PAD */
                                                0x5b,                   /* FC_END */
/* 712 */
                                                0x11, 0x0,    /* FC_RP */
/* 714 */     NdrFcShort( 0xffffff0c ),         /* Offset= -244 (470) */
/* 716 */
                                                0x1b,                   /* FC_CARRAY
*/
                                                0x0,                    /* 0 */
/* 718 */     NdrFcShort( 0x1 ),                /* 1 */
/* 720 */     0x19,                             /* Corr desc:  field pointer, FC_ULONG
*/
                                                0x0,                    /*  */
/* 722 */     NdrFcShort( 0x0 ),                /* 0 */
/* 724 */     0x1,                              /* FC_BYTE */
                                                0x5b,                   /* FC_END */
/* 726 */
                                                0x16,                   /* FC_PSTRUCT
*/
                                                0x3,                    /* 3 */
/* 728 */     NdrFcShort( 0x8 ),                /* 8 */
/* 730 */
                                                0x4b,                   /* FC_PP */
                                                0x5c,                   /* FC_PAD */
/* 732 */
                                                0x46,                   /*
FC_NO_REPEAT */
                                                0x5c,                   /* FC_PAD */
/* 734 */     NdrFcShort( 0x4 ),                /* 4 */
/* 736 */     NdrFcShort( 0x4 ),                /* 4 */
/* 738 */     0x12, 0x0,    /* FC_UP */
/* 740 */     NdrFcShort( 0xffffffe8 ),         /* Offset= -24 (716) */
/* 742 */
                                                0x5b,                   /* FC_END */
                                                0x8,                    /* FC_LONG */
/* 744 */     0x8,                              /* FC_LONG */
                                                0x5b,                   /* FC_END */
/* 746 */
                                                0x1b,                   /* FC_CARRAY
*/
                                                0x1,                    /* 1 */
/* 748 */     NdrFcShort( 0x2 ),                /* 2 */
/* 750 */     0x19,                             /* Corr desc:  field pointer, FC_ULONG
*/
                                                0x0,                    /*  */
/* 752 */     NdrFcShort( 0x0 ),                /* 0 */
/* 754 */     0x6,                              /* FC_SHORT */
                                                0x5b,                   /* FC_END */
/* 756 */
                                                0x16,                   /* FC_PSTRUCT
*/
                                                0x3,                    /* 3 */
/* 758 */     NdrFcShort( 0x8 ),                /* 8 */
/* 760 */
                                                0x4b,                   /* FC_PP */
                                                0x5c,                   /* FC_PAD */
/* 762 */
                                                0x46,                   /*
FC_NO_REPEAT */
                                                0x5c,                   /* FC_PAD */
/* 764 */     NdrFcShort( 0x4 ),                /* 4 */
/* 766 */     NdrFcShort( 0x4 ),                /* 4 */
/* 768 */     0x12, 0x0,    /* FC_UP */
/* 770 */     NdrFcShort( 0xffffffe8 ),         /* Offset= -24 (746) */
/* 772 */
                                                0x5b,                   /* FC_END */
                                                0x8,                    /* FC_LONG */
/* 774 */     0x8,                              /* FC_LONG */
                                                0x5b,                   /* FC_END */
/* 776 */
                                                0x1b,                   /* FC_CARRAY
*/
                                                0x3,                    /* 3 */
/* 778 */     NdrFcShort( 0x4 ),                /* 4 */
/* 780 */     0x19,                             /* Corr desc:  field pointer, FC_ULONG
*/
                                                0x0,                    /*  */
/* 782 */     NdrFcShort( 0x0 ),                /* 0 */
/* 784 */     0x8,                              /* FC_LONG */
                                                0x5b,                   /* FC_END */
/* 786 */
                                                0x16,                   /* FC_PSTRUCT
*/
                                                0x3,                    /* 3 */
/* 788 */     NdrFcShort( 0x8 ),                /* 8 */
/* 790 */
                                                0x4b,                   /* FC_PP */
                                                0x5c,                   /* FC_PAD */
/* 792 */
                                                0x46,                   /*
FC_NO_REPEAT */
                                                0x5c,                   /* FC_PAD */
/* 794 */     NdrFcShort( 0x4 ),                /* 4 */
/* 796 */     NdrFcShort( 0x4 ),                /* 4 */
/* 798 */     0x12, 0x0,    /* FC_UP */
/* 800 */     NdrFcShort( 0xffffffe8 ),         /* Offset= -24 (776) */
/* 802 */
                                                0x5b,                   /* FC_END */
                                                0x8,                    /* FC_LONG */
/* 804 */     0x8,                              /* FC_LONG */
                                                0x5b,                   /* FC_END */
/* 806 */
                                                0x1b,                   /* FC_CARRAY
*/
                                                0x7,                    /* 7 */
/* 808 */     NdrFcShort( 0x8 ),                /* 8 */
/* 810 */     0x19,                             /* Corr desc:  field pointer, FC_ULONG
*/
                                                0x0,                    /*  */
/* 812 */     NdrFcShort( 0x0 ),                /* 0 */
/* 814 */     0xb,                              /* FC_HYPER */
                                                0x5b,                   /* FC_END */
/* 816 */
                                                0x16,                   /* FC_PSTRUCT
*/
                                                0x3,                    /* 3 */
/* 818 */     NdrFcShort( 0x8 ),                /* 8 */
/* 820 */
                                                0x4b,                   /* FC_PP */
                                                0x5c,                   /* FC_PAD */
/* 822 */
                                                0x46,                   /*
FC_NO_REPEAT */
                                                0x5c,                   /* FC_PAD */
/* 824 */     NdrFcShort( 0x4 ),                /* 4 */
/* 826 */     NdrFcShort( 0x4 ),                /* 4 */
/* 828 */     0x12, 0x0,    /* FC_UP */
/* 830 */     NdrFcShort( 0xffffffe8 ),         /* Offset= -24 (806) */
/* 832 */
                                                0x5b,                   /* FC_END */
                                                0x8,                    /* FC_LONG */
/* 834 */     0x8,                              /* FC_LONG */
                                                0x5b,                   /* FC_END */
/* 836 */
                                                0x15,                   /* FC_STRUCT
*/
                                                0x3,                    /* 3 */
/* 838 */     NdrFcShort( 0x8 ),                /* 8 */
/* 840 */     0x8,                              /* FC_LONG */
                                                0x8,                    /* FC_LONG */
/* 842 */     0x5c,                             /* FC_PAD */
                                                0x5b,                   /* FC_END */
/* 844 */
                                                0x1b,                   /* FC_CARRAY
*/
                                                0x3,                    /* 3 */
/* 846 */     NdrFcShort( 0x8 ),                /* 8 */
/* 848 */     0x7,                              /* Corr desc: FC_USHORT */
                                                0x0,                    /*  */
```

```
/* 850 */     NdrFcShort( 0xffd8 ),      /* -40 */
/* 852 */     0x4c,                      /* FC_EMBEDDED_COMPLEX */
              0x0,                                /* 0 */
/* 854 */     NdrFcShort( 0xffffffee ),  /* Offset= -18 (836) */
/* 856 */     0x5c,                      /* FC_PAD */
              0x5b,                               /* FC_END */
/* 858 */
              0x1a,                               /*
FC_BOGUS_STRUCT */
              0x3,                                /* 3 */
/* 860 */     NdrFcShort( 0x28 ),        /* 40 */
/* 862 */     NdrFcShort( 0xffffffee ),  /* Offset= -18 (844) */
/* 864 */     NdrFcShort( 0x0 ),         /* Offset= 0 (864) */
/* 866 */     0x6,                       /* FC_SHORT */
              0x6,                                /* FC_SHORT
*/
/* 868 */     0x38,                      /* FC_ALIGNM4 */
              0x8,                                /* FC_LONG */
/* 870 */     0x8,                       /* FC_LONG */
              0x4c,                               /*
FC_EMBEDDED_COMPLEX */
/* 872 */     0x0,                       /* 0 */
              NdrFcShort( 0xfffffdf7 ),  /* Offset= -
521 (352) */
              0x5b,                               /* FC_END */
/* 876 */
              0x12, 0x0,    /* FC_UP */
/* 878 */     NdrFcShort( 0xfffffef6 ),  /* Offset= -266 (612) */
/* 880 */
              0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 882 */     0x1,                       /* FC_BYTE */
              0x5c,                               /* FC_PAD */
/* 884 */
              0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 886 */     0x6,                       /* FC_SHORT */
              0x5c,                               /* FC_PAD */
/* 888 */
              0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 890 */     0x8,                       /* FC_LONG */
              0x5c,                               /* FC_PAD */
/* 892 */
              0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 894 */     0xa,                       /* FC_FLOAT */
              0x5c,                               /* FC_PAD */
/* 896 */
              0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 898 */     0xc,                       /* FC_DOUBLE */
              0x5c,                               /* FC_PAD */
/* 900 */
              0x12, 0x0,    /* FC_UP */
/* 902 */     NdrFcShort( 0xfffffd90 ),  /* Offset= -624 (278) */
/* 904 */
              0x12, 0x10,   /* FC_UP [pointer_deref]
*/
/* 906 */     NdrFcShort( 0xfffffd92 ),  /* Offset= -622 (284) */
/* 908 */
              0x12, 0x10,   /* FC_UP [pointer_deref]
*/
/* 910 */     NdrFcShort( 0xfffffda6 ),  /* Offset= -602 (308) */
/* 912 */
              0x12, 0x10,   /* FC_UP [pointer_deref]
*/
/* 914 */     NdrFcShort( 0xfffffdb4 ),  /* Offset= -588 (326) */
/* 916 */
              0x12, 0x10,   /* FC_UP [pointer_deref]
*/
/* 918 */     NdrFcShort( 0xfffffdc2 ),  /* Offset= -574 (344) */
/* 920 */
              0x12, 0x10,   /* FC_UP [pointer_deref]
*/
/* 922 */     NdrFcShort( 0x2 ),         /* Offset= 2 (924) */
/* 924 */
              0x12, 0x0,    /* FC_UP */
/* 926 */     NdrFcShort( 0x16 ),        /* Offset= 22 (948) */
/* 928 */
              0x15,                               /* FC_STRUCT
*/
              0x7,                                /* 7 */
/* 930 */     NdrFcShort( 0x10 ),        /* 16 */
/* 932 */     0x6,                       /* FC_SHORT */
              0x1,                                /* FC_BYTE */
/* 934 */     0x1,                       /* FC_BYTE */
              0x38,                               /* FC_ALIGNM4
*/
/* 936 */     0x8,                       /* FC_LONG */
              0x39,                               /* FC_ALIGNM8
*/
/* 938 */     0xb,                       /* FC_HYPER */
              0x5b,                               /* FC_END */
/* 940 */
              0x12, 0x0,    /* FC_UP */
/* 942 */     NdrFcShort( 0xfffffff2 ),  /* Offset= -14 (928) */
/* 944 */
              0x12, 0x8,    /* FC_UP [simple_pointer]
*/
/* 946 */     0x2,                       /* FC_CHAR */
              0x5c,                               /* FC_PAD */
/* 948 */
              0x1a,                               /*
FC_BOGUS_STRUCT */
              0x7,                                /* 7 */
/* 950 */     NdrFcShort( 0x20 ),        /* 32 */
/* 952 */     NdrFcShort( 0x0 ),         /* 0 */
/* 954 */     NdrFcShort( 0x0 ),         /* Offset= 0 (954) */
/* 956 */     0x8,                       /* FC_LONG */
              0x8,                                /* FC_LONG */
/* 958 */     0x6,                       /* FC_SHORT */
              0x6,                                /* FC_SHORT
*/
/* 960 */     0x6,                       /* FC_SHORT */
              0x6,                                /* FC_SHORT
*/
/* 962 */     0x4c,                      /* FC_EMBEDDED_COMPLEX */
              0x0,                                /* 0 */
/* 964 */     NdrFcShort( 0xfffffc42 ),  /* Offset= -958 (6) */
/* 966 */     0x5c,                      /* FC_PAD */
              0x5b,                               /* FC_END */
/* 968 */     0xb4,                      /* FC_USER_MARSHAL */
              0x83,                               /* 131 */
/* 970 */     NdrFcShort( 0x0 ),         /* 0 */
/* 972 */     NdrFcShort( 0x10 ),        /* 16 */
/* 974 */     NdrFcShort( 0x0 ),         /* 0 */
/* 976 */     NdrFcShort( 0xfffffc32 ),  /* Offset= -974 (2) */
/* 978 */
              0x11, 0x4,    /* FC_RP
[alloced_on_stack] */
/* 980 */     NdrFcShort( 0x6 ),         /* Offset= 6 (986) */
/* 982 */
              0x13, 0x0,    /* FC_OP */
/* 984 */     NdrFcShort( 0xffffffdc ),  /* Offset= -36 (948) */
/* 986 */     0xb4,                      /* FC_USER_MARSHAL */
              0x83,                               /* 131 */
/* 988 */     NdrFcShort( 0x0 ),         /* 0 */
/* 990 */     NdrFcShort( 0x10 ),        /* 16 */
/* 992 */     NdrFcShort( 0x0 ),         /* 0 */
/* 994 */     NdrFcShort( 0xfffffff4 ),  /* Offset= -12 (982) */
              0x0
            }
    };

const CInterfaceProxyVtbl * _tpcc_com_ps_ProxyVtblList[] =
{
    ( CInterfaceProxyVtbl *) &_ITPCCProxyVtbl,
    0
};

const CInterfaceStubVtbl * _tpcc_com_ps_StubVtblList[] =
{
    ( CInterfaceStubVtbl *) &_ITPCCStubVtbl,
    0
};

PCInterfaceName const _tpcc_com_ps_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_AXP64)*/


#pragma warning( disable: 4049 )  /* more than 64k source lines */

/* this ALWAYS GENERATED file contains the proxy stub code */


 /* File created by MIDL compiler version 5.03.0280 */
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b run,appending), ms_ext, c_ext,
robust
    error checks: allocation ref bounds_check enum stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany), __declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if defined(_M_IA64) || defined(_M_AXP64)
#define USE_STUBLESS_PROXY


/* verify that the <rpcproxy.h> version is high enough to compile 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   979
#define PROC_FORMAT_STRING_SIZE   253
#define TRANSMIT_AS_TABLE_SIZE    0
#define WIRE_MARSHAL_TABLE_SIZE   1

typedef struct _MIDL_TYPE_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ TYPE_FORMAT_STRING_SIZE ];
    } MIDL_TYPE_FORMAT_STRING;

typedef struct _MIDL_PROC_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ PROC_FORMAT_STRING_SIZE ];
    } MIDL_PROC_FORMAT_STRING;


extern const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString;


/* Standard interface: __MIDL_itf_tpcc_com_ps_0000, ver. 0.0,
   GUID={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}} */


extern const MIDL_STUB_DESC Object_StubDesc;


extern const MIDL_SERVER_INFO ITPCC_ServerInfo;

#pragma code_seg(".orpc")
static const unsigned short ITPCC_FormatStringOffsetTable[] =
    {
    0,
    44,
    88,
    132,
    176,
    220
    };

static const MIDL_SERVER_INFO ITPCC_ServerInfo =
    {
    &Object_StubDesc,
    0,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0,
    0
    };

static const MIDL_STUBLESS_PROXY_INFO ITPCC_ProxyInfo =
    {
    &Object_StubDesc,
    __MIDL_ProcFormatString.Format,
    &ITPCC_FormatStringOffsetTable[-3],
    0,
    0,
    0
    };

CINTERFACE_PROXY_VTABLE(9) _ITPCCProxyVtbl =
{
    &ITPCC_ProxyInfo,
    &IID_ITPCC,
    IUnknown_QueryInterface_Proxy,
    IUnknown_AddRef_Proxy,
    IUnknown_Release_Proxy ,
    (void *)-1 /* ITPCC::NewOrder */ ,
    (void *)-1 /* ITPCC::Payment */ ,
    (void *)-1 /* ITPCC::Delivery */ ,
    (void *)-1 /* ITPCC::StockLevel */ ,
    (void *)-1 /* ITPCC::OrderStatus */ ,
    (void *)-1 /* ITPCC::CallSetComplete */
};

const CInterfaceStubVtbl _ITPCCStubVtbl =
{
    &IID_ITPCC,
    &ITPCC_ServerInfo,
    9,
    0, /* pure interpreted */
    CStdStubBuffer_METHODS
};

extern const USER_MARSHAL_ROUTINE_QUADRUPLE
UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ];

static const MIDL_STUB_DESC Object_StubDesc =
    {
```

```
    0,
    NdrOleAllocate,
    NdrOleFree,
    0,
    0,
    0,
    0,
    0,
    __MIDL_TypeFormatString.Format,
    1, /* -error bounds_check flag */
    0x50002, /* Ndr library version */
    0,
    0x5030118, /* MIDL Version 5.3.280 */
    0,
    UserMarshalRoutines,
    0,  /* notify & notify_flag routine table */
    0x1, /* MIDL flag */
    0,  /* Reserved3 */
    0,  /* Reserved4 */
    0   /* Reserved5 */
    };

#pragma data_seg(".rdata")

static const USER_MARSHAL_ROUTINE_QUADRUPLE
UserMarshalRoutines[ WIRE_MARSHAL_TABLE_SIZE ] =
        {

            {
            VARIANT_UserSize
            ,VARIANT_UserMarshal
            ,VARIANT_UserUnmarshal
            ,VARIANT_UserFree
            }

        };


#if !defined(__RPC_WIN64__)
#error  Invalid build platform for this stub.
#endif

static const MIDL_PROC_FORMAT_STRING __MIDL_ProcFormatString =
    {
        0,
        {

            /* Procedure NewOrder */

                                        0x33,                       /*
FC_AUTO_HANDLE */
                                        0x6c,                       /* Old Flags:
object, Oi2 */
/*  2 */    NdrFcLong( 0x0 ),           /* 0 */
/*  6 */    NdrFcShort( 0x3 ),          /* 3 */
#ifndef _ALPHA_
/*  8 */    NdrFcShort( 0x38 ),         /* ia64 Stack size/offset = 56 */
#else
                                        NdrFcShort( 0x30 ),         /* axp64
Stack size/offset = 48 */
#endif
/* 10 */    NdrFcShort( 0x0 ),          /* 0 */
/* 12 */    NdrFcShort( 0x8 ),          /* 8 */
/* 14 */    0x47,                       /* Oi2 Flags:  srv must size, clt must
size, has return, has ext, */
                                        0x3,                        /* 3 */
/* 16 */    0xa,                        /* 10 */
                                        0x7,                        /* Ext Flags:
new corr desc, clt corr check, srv corr check, */
/* 18 */    NdrFcShort( 0x20 ),         /* 32 */
/* 20 */    NdrFcShort( 0x20 ),         /* 32 */
/* 22 */    NdrFcShort( 0x0 ),          /* 0 */
/* 24 */    NdrFcShort( 0x0 ),          /* 0 */

            /* Parameter txn_in */

/* 26 */    NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
/* 28 */    NdrFcShort( 0x10 ),         /* ia64 Stack size/offset = 16 */
#else
                                        NdrFcShort( 0x8 ),          /* axp64
Stack size/offset = 8 */
#endif
/* 30 */    NdrFcShort( 0x3b6 ),        /* Type Offset=950 */

            /* Parameter txn_out */

/* 32 */    NdrFcShort( 0x6113 ),       /* Flags:  must size, must free, out,
simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 34 */    NdrFcShort( 0x28 ),         /* ia64 Stack size/offset = 40 */
#else
                                        NdrFcShort( 0x20 ),         /* axp64
Stack size/offset = 32 */
#endif
/* 36 */    NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

            /* Return value */

/* 38 */    NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 40 */    NdrFcShort( 0x30 ),         /* ia64 Stack size/offset = 48 */
#else
                                        NdrFcShort( 0x28 ),         /* axp64
Stack size/offset = 40 */
#endif
/* 42 */    0x8,                        /* FC_LONG */
                                        0x0,                        /* 0 */

            /* Procedure Payment */

/* 44 */    0x33,                       /* FC_AUTO_HANDLE */
                                        0x6c,                       /* Old Flags:
object, Oi2 */
/* 46 */    NdrFcLong( 0x0 ),           /* 0 */
/* 50 */    NdrFcShort( 0x4 ),          /* 4 */
#ifndef _ALPHA_
/* 52 */    NdrFcShort( 0x38 ),         /* ia64 Stack size/offset = 56 */
#else
                                        NdrFcShort( 0x30 ),         /* axp64
Stack size/offset = 48 */
#endif
/* 54 */    NdrFcShort( 0x0 ),          /* 0 */
/* 56 */    NdrFcShort( 0x8 ),          /* 8 */
/* 58 */    0x47,                       /* Oi2 Flags:  srv must size, clt must
size, has return, has ext, */
                                        0x3,                        /* 3 */
/* 60 */    0xa,                        /* 10 */
                                        0x7,                        /* Ext Flags:
new corr desc, clt corr check, srv corr check, */
/* 62 */    NdrFcShort( 0x20 ),         /* 32 */
/* 64 */    NdrFcShort( 0x20 ),         /* 32 */
/* 66 */    NdrFcShort( 0x0 ),          /* 0 */
/* 68 */    NdrFcShort( 0x0 ),          /* 0 */

            /* Parameter txn_in */

/* 70 */    NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
/* 72 */    NdrFcShort( 0x10 ),         /* ia64 Stack size/offset = 16 */
#else
                                        NdrFcShort( 0x8 ),          /* axp64
Stack size/offset = 8 */
#endif
/* 74 */    NdrFcShort( 0x3b6 ),        /* Type Offset=950 */

            /* Parameter txn_out */

/* 76 */    NdrFcShort( 0x6113 ),       /* Flags:  must size, must free, out,
simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 78 */    NdrFcShort( 0x28 ),         /* ia64 Stack size/offset = 40 */
#else
                                        NdrFcShort( 0x20 ),         /* axp64
Stack size/offset = 32 */
#endif
/* 80 */    NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

            /* Return value */

/* 82 */    NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 84 */    NdrFcShort( 0x30 ),         /* ia64 Stack size/offset = 48 */
#else
                                        NdrFcShort( 0x28 ),         /* axp64
Stack size/offset = 40 */
#endif
/* 86 */    0x8,                        /* FC_LONG */
                                        0x0,                        /* 0 */

            /* Procedure Delivery */

/* 88 */    0x33,                       /* FC_AUTO_HANDLE */
                                        0x6c,                       /* Old Flags:
object, Oi2 */
/* 90 */    NdrFcLong( 0x0 ),           /* 0 */
/* 94 */    NdrFcShort( 0x5 ),          /* 5 */
#ifndef _ALPHA_
/* 96 */    NdrFcShort( 0x38 ),         /* ia64 Stack size/offset = 56 */
#else
                                        NdrFcShort( 0x30 ),         /* axp64
Stack size/offset = 48 */
#endif
/* 98 */    NdrFcShort( 0x0 ),          /* 0 */
/* 100 */   NdrFcShort( 0x8 ),          /* 8 */
/* 102 */   0x47,                       /* Oi2 Flags:  srv must size, clt must
size, has return, has ext, */
                                        0x3,                        /* 3 */
/* 104 */   0xa,                        /* 10 */
                                        0x7,                        /* Ext Flags:
new corr desc, clt corr check, srv corr check, */
/* 106 */   NdrFcShort( 0x20 ),         /* 32 */
/* 108 */   NdrFcShort( 0x20 ),         /* 32 */
/* 110 */   NdrFcShort( 0x0 ),          /* 0 */
/* 112 */   NdrFcShort( 0x0 ),          /* 0 */

            /* Parameter txn_in */

/* 114 */   NdrFcShort( 0x8b ),         /* Flags:  must size, must free, in, by
val, */
#ifndef _ALPHA_
/* 116 */   NdrFcShort( 0x10 ),         /* ia64 Stack size/offset = 16 */
#else
                                        NdrFcShort( 0x8 ),          /* axp64
Stack size/offset = 8 */
#endif
/* 118 */   NdrFcShort( 0x3b6 ),        /* Type Offset=950 */

            /* Parameter txn_out */

/* 120 */   NdrFcShort( 0x6113 ),       /* Flags:  must size, must free, out,
simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 122 */   NdrFcShort( 0x28 ),         /* ia64 Stack size/offset = 40 */
#else
                                        NdrFcShort( 0x20 ),         /* axp64
Stack size/offset = 32 */
#endif
/* 124 */   NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

            /* Return value */

/* 126 */   NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 128 */   NdrFcShort( 0x30 ),         /* ia64 Stack size/offset = 48 */
#else
                                        NdrFcShort( 0x28 ),         /* axp64
Stack size/offset = 40 */
#endif
/* 130 */   0x8,                        /* FC_LONG */
                                        0x0,                        /* 0 */

            /* Procedure StockLevel */

/* 132 */   0x33,                       /* FC_AUTO_HANDLE */
                                        0x6c,                       /* Old Flags:
object, Oi2 */
/* 134 */   NdrFcLong( 0x0 ),           /* 0 */
/* 138 */   NdrFcShort( 0x6 ),          /* 6 */
#ifndef _ALPHA_
/* 140 */   NdrFcShort( 0x38 ),         /* ia64 Stack size/offset = 56 */
#else
                                        NdrFcShort( 0x30 ),         /* axp64
Stack size/offset = 48 */
#endif
/* 142 */   NdrFcShort( 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, */
#ifndef _ALPHA_
/* 160 */   NdrFcShort( 0x10 ),         /* ia64 Stack size/offset = 16 */
#else
                                        NdrFcShort( 0x8 ),          /* axp64
Stack size/offset = 8 */
#endif
/* 162 */   NdrFcShort( 0x3b6 ),        /* Type Offset=950 */

            /* Parameter txn_out */

/* 164 */   NdrFcShort( 0x6113 ),       /* Flags:  must size, must free, out,
simple ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 166 */   NdrFcShort( 0x28 ),         /* ia64 Stack size/offset = 40 */
#else
                                        NdrFcShort( 0x20 ),         /* axp64
Stack size/offset = 32 */
#endif
/* 168 */   NdrFcShort( 0x3c8 ),        /* Type Offset=968 */

            /* Return value */

/* 170 */   NdrFcShort( 0x70 ),         /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 172 */   NdrFcShort( 0x30 ),         /* ia64 Stack size/offset = 48 */
#else
                                        NdrFcShort( 0x28 ),         /* axp64
Stack size/offset = 40 */
#endif
/* 174 */   0x8,                        /* FC_LONG */
                                        0x0,                        /* 0 */

            /* Procedure OrderStatus */

/* 176 */   0x33,                       /* FC_AUTO_HANDLE */
                                        0x6c,                       /* Old Flags:
object, Oi2 */
/* 178 */   NdrFcLong( 0x0 ),           /* 0 */
/* 182 */   NdrFcShort( 0x7 ),          /* 7 */
#ifndef _ALPHA_
/* 184 */   NdrFcShort( 0x38 ),         /* ia64 Stack size/offset = 56 */
#else
                                        NdrFcShort( 0x30 ),         /* axp64
Stack size/offset = 48 */
#endif
/* 186 */   NdrFcShort( 0x0 ),          /* 0 */
/* 188 */   NdrFcShort( 0x8 ),          /* 8 */
/* 190 */   0x47,                       /* Oi2 Flags:  srv must size, clt 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, */
#ifndef _ALPHA_
/* 204 */   NdrFcShort( 0x10 ),         /* ia64 Stack size/offset = 16 */
#else
                                        NdrFcShort( 0x8 ),          /* axp64
Stack size/offset = 8 */
#endif
/* 206 */   NdrFcShort( 0x3b6 ),        /* Type Offset=950 */

            /* Parameter txn_out */
```

```
/* 208 */    NdrFcShort( 0x6113 ),      /* Flags:  must size, must free, out,
simple_ref, srv alloc size=24 */
#ifndef _ALPHA_
/* 210 */    NdrFcShort( 0x28 ),        /* ia64 Stack size/offset = 40 */
#else
                                        NdrFcShort( 0x20 ),        /* axp64
Stack size/offset = 32 */
#endif
/* 212 */    NdrFcShort( 0x3c8 ),       /* Type Offset=968 */

            /* Return value */

/* 214 */    NdrFcShort( 0x70 ),        /* Flags:  out, return, base type, */
#ifndef _ALPHA_
/* 216 */    NdrFcShort( 0x30 ),        /* ia64 Stack size/offset = 48 */
#else
                                        NdrFcShort( 0x28 ),        /* axp64
Stack size/offset = 40 */
#endif
/* 218 */    0x8,                       /* FC_LONG */
                                        0x0,                       /* 0 */

            /* Procedure CallSetComplete */

/* 220 */    0x33,                      /* FC_AUTO_HANDLE */
                                        0x6c,                      /* Old Flags:
object, Oi2 */
/* 222 */    NdrFcLong( 0x0 ),          /* 0 */
/* 226 */    NdrFcShort( 0x8 ),         /* 8 */
/* 228 */    NdrFcShort( 0x10 ),        /* ia64, axp64 Stack size/offset = 16 */
/* 230 */    NdrFcShort( 0x0 ),         /* 0 */
/* 232 */    NdrFcShort( 0x8 ),         /* 8 */
/* 234 */    0x44,                      /* Oi2 Flags:  has return, has ext, */
                                        0x1,                       /* 1 */
/* 236 */    0xa,                       /* 10 */
                                        0x1,                       /* Ext Flags:
new corr desc, */
/* 238 */    NdrFcShort( 0x0 ),         /* 0 */
/* 240 */    NdrFcShort( 0x0 ),         /* 0 */
/* 242 */    NdrFcShort( 0x0 ),         /* 0 */
/* 244 */    NdrFcShort( 0x0 ),         /* 0 */

            /* Return value */

/* 246 */    NdrFcShort( 0x70 ),        /* Flags:  out, return, base type, */
/* 248 */    NdrFcShort( 0x8 ),         /* ia64, axp64 Stack size/offset = 8 */
/* 250 */    0x8,                       /* FC_LONG */
                                        0x0,                       /* 0 */

                                        0x0

        }
    };

static const MIDL_TYPE_FORMAT_STRING __MIDL_TypeFormatString =
    {
        0,
        {
                                        NdrFcShort( 0x0 ),         /* 0 */
/*  2 */
                                        0x12, 0x0,   /* FC_UP */
/*  4 */    NdrFcShort( 0x39e ),       /* Offset= 926 (930) */
/*  6 */
                                        0x2b,                      /*
FC_NON_ENCAPSULATED_UNION */
                                        0x9,                       /* FC_ULONG
*/
/*  8 */    0x7,                       /* Corr desc: FC_USHORT */
                                        0x0,                       /*  */
/* 10 */    NdrFcShort( 0xfff8 ),      /* -8 */
/* 12 */    NdrFcShort( 0x1 ),         /* Corr flags:  early, */
/* 14 */    NdrFcShort( 0x2 ),         /* Offset= 2 (16) */
/* 16 */    NdrFcShort( 0x10 ),        /* 16 */
/* 18 */    NdrFcShort( 0x2b ),        /* 43 */
/* 20 */    NdrFcLong( 0x3 ),          /* 3 */
/* 24 */    NdrFcShort( 0x8008 ),      /* Simple arm type: FC_LONG */
/* 26 */    NdrFcLong( 0x11 ),         /* 17 */
/* 30 */    NdrFcShort( 0x8001 ),      /* Simple arm type: FC_BYTE */
/* 32 */    NdrFcLong( 0x2 ),          /* 2 */
/* 36 */    NdrFcShort( 0x8006 ),      /* Simple arm type: FC_SHORT */
/* 38 */    NdrFcLong( 0x4 ),          /* 4 */
/* 42 */    NdrFcShort( 0x800a ),      /* Simple arm type: FC_FLOAT */
/* 44 */    NdrFcLong( 0x5 ),          /* 5 */
/* 48 */    NdrFcShort( 0x800c ),      /* Simple arm type: FC_DOUBLE */
/* 50 */    NdrFcLong( 0xb ),          /* 11 */
/* 54 */    NdrFcShort( 0x8006 ),      /* Simple arm type: FC_SHORT */
/* 56 */    NdrFcLong( 0xa ),          /* 10 */
/* 60 */    NdrFcShort( 0x8008 ),      /* Simple arm type: FC_LONG */
/* 62 */    NdrFcLong( 0x6 ),          /* 6 */
/* 66 */    NdrFcShort( 0xd6 ),        /* Offset= 214 (280) */
/* 68 */    NdrFcLong( 0x7 ),          /* 7 */
/* 72 */    NdrFcShort( 0x800c ),      /* Simple arm type: FC_DOUBLE */
/* 74 */    NdrFcLong( 0x8 ),          /* 8 */
/* 78 */    NdrFcShort( 0xd0 ),        /* Offset= 208 (286) */
/* 80 */    NdrFcLong( 0xd ),          /* 13 */
/* 84 */    NdrFcShort( 0xe4 ),        /* Offset= 228 (312) */
/* 86 */    NdrFcLong( 0x9 ),          /* 9 */
/* 90 */    NdrFcShort( 0xf0 ),        /* Offset= 240 (330) */
/* 92 */    NdrFcLong( 0x2000 ),       /* 8192 */
/* 96 */    NdrFcShort( 0xfc ),        /* Offset= 252 (348) */
/* 98 */    NdrFcLong( 0x24 ),         /* 36 */
/* 102 */   NdrFcShort( 0x2f4 ),       /* Offset= 756 (858) */
/* 104 */   NdrFcLong( 0x4024 ),       /* 16420 */
/* 108 */   NdrFcShort( 0x2ee ),       /* Offset= 750 (858) */
/* 110 */   NdrFcLong( 0x4011 ),       /* 16401 */
/* 114 */   NdrFcShort( 0x2ec ),       /* Offset= 748 (862) */
/* 116 */   NdrFcLong( 0x4002 ),       /* 16386 */
/* 120 */   NdrFcShort( 0x2ea ),       /* Offset= 746 (866) */
/* 122 */   NdrFcLong( 0x4003 ),       /* 16387 */
/* 126 */   NdrFcShort( 0x2e8 ),       /* Offset= 744 (870) */
/* 128 */   NdrFcLong( 0x4004 ),       /* 16388 */
/* 132 */   NdrFcShort( 0x2e6 ),       /* Offset= 742 (874) */
/* 134 */   NdrFcLong( 0x4005 ),       /* 16389 */
/* 138 */   NdrFcShort( 0x2e4 ),       /* Offset= 740 (878) */
/* 140 */   NdrFcLong( 0x400b ),       /* 16395 */
/* 144 */   NdrFcShort( 0x2d2 ),       /* Offset= 722 (866) */
/* 146 */   NdrFcLong( 0x400a ),       /* 16394 */
/* 150 */   NdrFcShort( 0x2d0 ),       /* Offset= 720 (870) */
/* 152 */   NdrFcLong( 0x4006 ),       /* 16390 */
/* 156 */   NdrFcShort( 0x2d6 ),       /* Offset= 726 (882) */
/* 158 */   NdrFcLong( 0x4007 ),       /* 16391 */
/* 162 */   NdrFcShort( 0x2cc ),       /* Offset= 716 (878) */
/* 164 */   NdrFcLong( 0x4008 ),       /* 16392 */
/* 168 */   NdrFcShort( 0x2ce ),       /* Offset= 718 (886) */
/* 170 */   NdrFcLong( 0x400d ),       /* 16397 */
/* 174 */   NdrFcShort( 0x2cc ),       /* Offset= 716 (890) */
/* 176 */   NdrFcLong( 0x4009 ),       /* 16393 */
/* 180 */   NdrFcShort( 0x2ca ),       /* Offset= 714 (894) */
/* 182 */   NdrFcLong( 0x6000 ),       /* 24576 */
/* 186 */   NdrFcShort( 0x2c8 ),       /* Offset= 712 (898) */
/* 188 */   NdrFcLong( 0x400c ),       /* 16396 */
/* 192 */   NdrFcShort( 0x2c6 ),       /* Offset= 710 (902) */
/* 194 */   NdrFcLong( 0x10 ),         /* 16 */
/* 198 */   NdrFcShort( 0x8002 ),      /* Simple arm type: FC_CHAR */
/* 200 */   NdrFcLong( 0x12 ),         /* 18 */
/* 204 */   NdrFcShort( 0x8006 ),      /* Simple arm type: FC_SHORT */
/* 206 */   NdrFcLong( 0x13 ),         /* 19 */
/* 210 */   NdrFcShort( 0x8008 ),      /* Simple arm type: FC_LONG */
/* 212 */   NdrFcLong( 0x16 ),         /* 22 */
/* 216 */   NdrFcShort( 0x8008 ),      /* Simple arm type: FC_LONG */
/* 218 */   NdrFcLong( 0x17 ),         /* 23 */
/* 222 */   NdrFcShort( 0x8008 ),      /* Simple arm type: FC_LONG */
/* 224 */   NdrFcLong( 0xe ),          /* 14 */
/* 228 */   NdrFcShort( 0x2aa ),       /* Offset= 682 (910) */
/* 230 */   NdrFcLong( 0x400e ),       /* 16398 */
/* 234 */   NdrFcShort( 0x2b0 ),       /* Offset= 688 (922) */
/* 236 */   NdrFcLong( 0x4010 ),       /* 16400 */
/* 240 */   NdrFcShort( 0x2ae ),       /* Offset= 686 (926) */
/* 242 */   NdrFcLong( 0x4012 ),       /* 16402 */
/* 246 */   NdrFcShort( 0x26c ),       /* Offset= 620 (866) */
/* 248 */   NdrFcLong( 0x4013 ),       /* 16403 */
/* 252 */   NdrFcShort( 0x26a ),       /* Offset= 618 (870) */
/* 254 */   NdrFcLong( 0x4016 ),       /* 16406 */
/* 258 */   NdrFcShort( 0x264 ),       /* Offset= 612 (870) */
/* 260 */   NdrFcLong( 0x4017 ),       /* 16407 */
/* 264 */   NdrFcShort( 0x25e ),       /* Offset= 606 (870) */
/* 266 */   NdrFcLong( 0x0 ),          /* 0 */
/* 270 */   NdrFcShort( 0x0 ),         /* Offset= 0 (270) */
/* 272 */   NdrFcLong( 0x1 ),          /* 1 */
/* 276 */   NdrFcShort( 0x0 ),         /* Offset= 0 (276) */
/* 278 */   NdrFcShort( 0xffffffff ),  /* Offset= -1 (277) */
/* 280 */
                                        0x15,                      /* FC_STRUCT
*/
                                        0x7,                       /* 7 */
/* 282 */   NdrFcShort( 0x8 ),         /* 8 */
/* 284 */   0xb,                       /* FC_HYPER */
                                        0x5b,                      /* FC_END */
/* 286 */
                                        0x12, 0x0,   /* FC_UP */
/* 288 */   NdrFcShort( 0xe ),         /* Offset= 14 (302) */
/* 290 */
                                        0x1b,                      /* FC_CARRAY
*/
                                        0x1,                       /* 1 */
/* 292 */   NdrFcShort( 0x2 ),         /* 2 */
/* 294 */   0x9,                       /* Corr desc: FC_ULONG */
                                        0x0,                       /*  */
/* 296 */   NdrFcShort( 0xfffc ),      /* -4 */
/* 298 */   NdrFcShort( 0x1 ),         /* Corr flags:  early, */
/* 300 */   0x6,                       /* FC_SHORT */
                                        0x5b,                      /* FC_END */
/* 302 */
                                        0x17,                      /* FC_CSTRUCT
*/
                                        0x3,                       /* 3 */
/* 304 */   NdrFcShort( 0x8 ),         /* 8 */
/* 306 */   NdrFcShort( 0xfffffff0 ),  /* Offset= -16 (290) */
/* 308 */   0x8,                       /* FC_LONG */
                                        0x8,                       /* FC_LONG */
/* 310 */   0x5c,                      /* FC_PAD */
                                        0x5b,                      /* FC_END */
/* 312 */
                                        0x2f,                      /* FC_IP */
                                        0x5a,                      /*
FC_CONSTANT_IID */
/* 314 */   NdrFcLong( 0x0 ),          /* 0 */
/* 318 */   NdrFcShort( 0x0 ),         /* 0 */
/* 320 */   NdrFcShort( 0x0 ),         /* 0 */
/* 322 */   0xc0,                      /* 192 */
                                        0x0,                       /* 0 */
/* 324 */   0x0,                       /* 0 */
                                        0x0,                       /* 0 */
/* 326 */   0x0,                       /* 0 */
                                        0x0,                       /* 0 */
/* 328 */   0x0,                       /* 0 */
                                        0x46,                      /* 70 */
/* 330 */
                                        0x2f,                      /* FC_IP */
                                        0x5a,                      /*
FC_CONSTANT_IID */
/* 332 */   NdrFcLong( 0x20400 ),      /* 132096 */
/* 336 */   NdrFcShort( 0x0 ),         /* 0 */
/* 338 */   NdrFcShort( 0x0 ),         /* 0 */
/* 340 */   0xc0,                      /* 192 */
                                        0x0,                       /* 0 */
/* 342 */   0x0,                       /* 0 */
                                        0x0,                       /* 0 */
/* 344 */   0x0,                       /* 0 */
                                        0x0,                       /* 0 */
/* 346 */   0x0,                       /* 0 */
                                        0x46,                      /* 70 */
/* 348 */
                                        0x12, 0x10,  /* FC_UP [pointer_deref]
*/
/* 350 */    NdrFcShort( 0x2 ),        /* Offset= 2 (352) */
/* 352 */
                                        0x12, 0x0,   /* FC_UP */
/* 354 */    NdrFcShort( 0x1e6 ),      /* Offset= 486 (840) */
/* 356 */
                                        0x2a,                      /*
FC_ENCAPSULATED_UNION */
                                        0x89,                      /* 137 */
/* 358 */    NdrFcShort( 0x20 ),       /* 32 */
/* 360 */    NdrFcShort( 0xa ),        /* 10 */
/* 362 */    NdrFcLong( 0x8 ),         /* 8 */
/* 366 */    NdrFcShort( 0x50 ),       /* Offset= 80 (446) */
/* 368 */    NdrFcLong( 0xd ),         /* 13 */
/* 372 */    NdrFcShort( 0x70 ),       /* Offset= 112 (484) */
/* 374 */    NdrFcLong( 0x9 ),         /* 9 */
/* 378 */    NdrFcShort( 0x90 ),       /* Offset= 144 (522) */
/* 380 */    NdrFcLong( 0xc ),         /* 12 */
/* 384 */    NdrFcShort( 0xb0 ),       /* Offset= 176 (560) */
/* 386 */    NdrFcLong( 0x24 ),        /* 36 */
/* 390 */    NdrFcShort( 0x104 ),      /* Offset= 260 (650) */
/* 392 */    NdrFcLong( 0x800d ),      /* 32781 */
/* 396 */    NdrFcShort( 0x120 ),      /* Offset= 288 (684) */
/* 398 */    NdrFcLong( 0x10 ),        /* 16 */
/* 402 */    NdrFcShort( 0x13a ),      /* Offset= 314 (716) */
/* 404 */    NdrFcLong( 0x2 ),         /* 2 */
/* 408 */    NdrFcShort( 0x150 ),      /* Offset= 336 (744) */
/* 410 */    NdrFcLong( 0x3 ),         /* 3 */
/* 414 */    NdrFcShort( 0x166 ),      /* Offset= 358 (772) */
/* 416 */    NdrFcLong( 0x14 ),        /* 20 */
/* 420 */    NdrFcShort( 0x17c ),      /* Offset= 380 (800) */
/* 422 */    NdrFcShort( 0xffffffff ), /* Offset= -1 (421) */
/* 424 */
                                        0x21,                      /*
FC_BOGUS_ARRAY */
                                        0x3,                       /* 3 */
/* 426 */    NdrFcShort( 0x0 ),        /* 0 */
/* 428 */    0x19,                     /* Corr desc:  field pointer, FC_ULONG
*/
                                        0x0,                       /*  */
/* 430 */    NdrFcShort( 0x0 ),        /* 0 */
/* 432 */    NdrFcShort( 0x1 ),        /* Corr flags:  early, */
/* 434 */    NdrFcLong( 0xffffffff ),  /* -1 */
/* 438 */    NdrFcShort( 0x0 ),        /* Corr flags:  */
/* 440 */
                                        0x12, 0x0,   /* FC_UP */
/* 442 */    NdrFcShort( 0xffffff74 ), /* Offset= -140 (302) */
/* 444 */    0x5c,                     /* FC_PAD */
                                        0x5b,                      /* FC_END */
/* 446 */
                                        0x1a,                      /*
FC_BOGUS_STRUCT */
                                        0x3,                       /* 3 */
/* 448 */    NdrFcShort( 0x10 ),       /* 16 */
/* 450 */    NdrFcShort( 0x0 ),        /* 0 */
/* 452 */    NdrFcShort( 0x6 ),        /* Offset= 6 (458) */
/* 454 */    0x8,                      /* FC_LONG */
                                        0x39,                      /* FC_ALIGNM8
*/
/* 456 */    0x36,                     /* FC_POINTER */
                                        0x5b,                      /* FC_END */
/* 458 */
                                        0x11, 0x0,   /* FC_RP */
/* 460 */    NdrFcShort( 0xffffffdc ), /* Offset= -36 (424) */
/* 462 */
                                        0x21,                      /*
FC_BOGUS_ARRAY */
                                        0x3,                       /* 3 */
/* 464 */    NdrFcShort( 0x0 ),        /* 0 */
/* 466 */    0x19,                     /* Corr desc:  field pointer, FC_ULONG
*/
                                        0x0,                       /*  */
/* 468 */    NdrFcShort( 0x0 ),        /* 0 */
/* 470 */    NdrFcShort( 0x1 ),        /* Corr flags:  early, */
/* 472 */    NdrFcLong( 0xffffffff ),  /* -1 */
/* 476 */    NdrFcShort( 0x0 ),        /* Corr flags:  */
/* 478 */    0x4c,                     /* FC_EMBEDDED_COMPLEX */
                                        0x0,                       /* 0 */
/* 480 */    NdrFcShort( 0xffffff58 ), /* Offset= -168 (312) */
/* 482 */    0x5c,                     /* FC_PAD */
                                        0x5b,                      /* FC_END */
/* 484 */
                                        0x1a,                      /*
FC_BOGUS_STRUCT */
                                        0x3,                       /* 3 */
/* 486 */    NdrFcShort( 0x10 ),       /* 16 */
/* 488 */    NdrFcShort( 0x0 ),        /* 0 */
/* 490 */    NdrFcShort( 0x6 ),        /* Offset= 6 (496) */
/* 492 */    0x8,                      /* FC_LONG */
                                        0x39,                      /* FC_ALIGNM8
*/
/* 494 */    0x36,                     /* FC_POINTER */
                                        0x5b,                      /* FC_END */
/* 496 */
                                        0x11, 0x0,   /* FC_RP */
/* 498 */    NdrFcShort( 0xffffffdc ), /* Offset= -36 (462) */
/* 500 */
                                        0x21,                      /*
FC_BOGUS_ARRAY */
                                        0x3,                       /* 3 */
/* 502 */    NdrFcShort( 0x0 ),        /* 0 */
/* 504 */    0x19,                     /* Corr desc:  field pointer, FC_ULONG
*/
                                        0x0,                       /*  */
/* 506 */    NdrFcShort( 0x0 ),        /* 0 */
/* 508 */    NdrFcShort( 0x1 ),        /* Corr flags:  early, */
/* 510 */    NdrFcLong( 0xffffffff ),  /* -1 */
/* 514 */    NdrFcShort( 0x0 ),        /* Corr flags:  */
/* 516 */    0x4c,                     /* FC_EMBEDDED_COMPLEX */
                                        0x0,                       /* 0 */
/* 518 */    NdrFcShort( 0xffffff44 ), /* Offset= -188 (330) */
/* 520 */    0x5c,                     /* FC_PAD */
                                        0x5b,                      /* FC_END */
```

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/* 522 */                                   0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 524 */    NdrFcShort( 0x10 ),            /* 16 */
/* 526 */    NdrFcShort( 0x0 ),             /* 0 */
/* 528 */    NdrFcShort( 0x6 ),             /* Offset= 6 (534) */
/* 530 */    0x8,                           /* FC_LONG */
                                            0x39,                   /* FC_ALIGNM8
*/
/* 532 */    0x36,                          /* FC_POINTER */
                                            0x5b,                   /* FC_END */
/* 534 */
                                            0x11, 0x0,   /* FC_RP */
/* 536 */    NdrFcShort( 0xfffffffdc ),     /* Offset= -36 (500) */
/* 538 */
                                            0x21,                   /*
FC_BOGUS_ARRAY */
                                            0x3,                    /* 3 */
/* 540 */    NdrFcShort( 0x0 ),             /* 0 */
/* 542 */    0x19,                          /* Corr desc:  field pointer, FC_ULONG
*/
                                            0x0,                    /*  */
/* 544 */    NdrFcShort( 0x0 ),             /* 0 */
/* 546 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 548 */    NdrFcLong( 0xffffffff ),       /* -1 */
/* 552 */    NdrFcShort( 0x0 ),             /* Corr flags:  */
/* 554 */
                                            0x12, 0x0,   /* FC_UP */
/* 556 */    NdrFcShort( 0x176 ),           /* Offset= 374 (930) */
/* 558 */    0x5c,                          /* FC_PAD */
                                            0x5b,                   /* FC_END */
/* 560 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 562 */    NdrFcShort( 0x10 ),            /* 16 */
/* 564 */    NdrFcShort( 0x0 ),             /* 0 */
/* 566 */    NdrFcShort( 0x6 ),             /* Offset= 6 (572) */
/* 568 */    0x8,                           /* FC_LONG */
                                            0x39,                   /* FC_ALIGNM8
*/
/* 570 */    0x36,                          /* FC_POINTER */
                                            0x5b,                   /* FC_END */
/* 572 */
                                            0x11, 0x0,   /* FC_RP */
/* 574 */    NdrFcShort( 0xfffffffdc ),     /* Offset= -36 (538) */
/* 576 */
                                            0x2f,                   /* FC_IP */
                                            0x5a,                   /*
FC_CONSTANT_IID */
/* 578 */    NdrFcLong( 0x2f ),             /* 47 */
/* 582 */    NdrFcShort( 0x0 ),             /* 0 */
/* 584 */    NdrFcShort( 0x0 ),             /* 0 */
/* 586 */    0xc0,                          /* 192 */
                                            0x0,                    /* 0 */
/* 588 */    0x0,                           /* 0 */
                                            0x0,                    /* 0 */
/* 590 */    0x0,                           /* 0 */
                                            0x0,                    /* 0 */
/* 592 */    0x0,                           /* 0 */
                                            0x46,                   /* 70 */
/* 594 */
                                            0x1b,                   /* FC_CARRAY
*/
                                            0x0,                    /* 0 */
/* 596 */    NdrFcShort( 0x1 ),             /* 1 */
/* 598 */    0x19,                          /* Corr desc:  field pointer, FC_ULONG
*/
                                            0x0,                    /*  */
/* 600 */    NdrFcShort( 0x4 ),             /* 4 */
/* 602 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 604 */    0x1,                           /* FC_BYTE */
                                            0x5b,                   /* FC_END */
/* 606 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 608 */    NdrFcShort( 0x18 ),            /* 24 */
/* 610 */    NdrFcShort( 0x0 ),             /* 0 */
/* 612 */    NdrFcShort( 0xc ),             /* Offset= 12 (624) */
/* 614 */    0x8,                           /* FC_LONG */
                                            0x8,                    /* FC_LONG */
/* 616 */    0x4c,                          /* FC_EMBEDDED_COMPLEX */
                                            0x0,                    /* 0 */
/* 618 */    NdrFcShort( 0xffffffd6 ),      /* Offset= -42 (576) */
/* 620 */    0x39,                          /* FC_ALIGNM8 */
                                            0x36,                   /* FC_POINTER
*/
/* 622 */    0x5c,                          /* FC_PAD */
                                            0x5b,                   /* FC_END */
/* 624 */
                                            0x12, 0x0,   /* FC_UP */
/* 626 */    NdrFcShort( 0xffffffe0 ),      /* Offset= -32 (594) */
/* 628 */
                                            0x21,                   /*
FC_BOGUS_ARRAY */
                                            0x3,                    /* 3 */
/* 630 */    NdrFcShort( 0x0 ),             /* 0 */
/* 632 */    0x19,                          /* Corr desc:  field pointer, FC_ULONG
*/
                                            0x0,                    /*  */
/* 634 */    NdrFcShort( 0x0 ),             /* 0 */
/* 636 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 638 */    NdrFcLong( 0xffffffff ),       /* -1 */
/* 642 */    NdrFcShort( 0x0 ),             /* Corr flags:  */
/* 644 */
                                            0x12, 0x0,   /* FC_UP */
/* 646 */    NdrFcShort( 0xffffffd8 ),      /* Offset= -40 (606) */
/* 648 */    0x5c,                          /* FC_PAD */
                                            0x5b,                   /* FC_END */
/* 650 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 652 */    NdrFcShort( 0x10 ),            /* 16 */
/* 654 */    NdrFcShort( 0x0 ),             /* 0 */
/* 656 */    NdrFcShort( 0x6 ),             /* Offset= 6 (662) */
/* 658 */    0x8,                           /* FC_LONG */
                                            0x39,                   /* FC_ALIGNM8
*/
/* 660 */    0x36,                          /* FC_POINTER */
                                            0x5b,                   /* FC_END */
/* 662 */
                                            0x11, 0x0,   /* FC_RP */
/* 664 */    NdrFcShort( 0xfffffffdc ),     /* Offset= -36 (628) */
/* 666 */
                                            0x1d,                   /*
FC_SMFARRAY */
                                            0x0,                    /* 0 */
/* 668 */    NdrFcShort( 0x8 ),             /* 8 */
/* 670 */    0x1,                           /* FC_BYTE */
                                            0x5b,                   /* FC_END */
/* 672 */
                                            0x15,                   /* FC_STRUCT
*/
                                            0x3,                    /* 3 */
/* 674 */    NdrFcShort( 0x10 ),            /* 16 */
/* 676 */    0x8,                           /* FC_LONG */
                                            0x6,                    /* FC_SHORT
*/
/* 678 */    0x6,                           /* FC_SHORT */
                                            0x4c,                   /*
FC_EMBEDDED_COMPLEX */
/* 680 */    0x0,                           /* 0 */
                                            NdrFcShort( 0xfffffff1 ),  /* Offset= -
15 (666) */
                                            0x5b,                   /* FC_END */
/* 684 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 686 */    NdrFcShort( 0x20 ),            /* 32 */
/* 688 */    NdrFcShort( 0x0 ),             /* 0 */
/* 690 */    NdrFcShort( 0xa ),             /* Offset= 10 (700) */
/* 692 */    0x8,                           /* FC_LONG */
                                            0x39,                   /* FC_ALIGNM8
*/
/* 694 */    0x36,                          /* FC_POINTER */
                                            0x4c,                   /*
FC_EMBEDDED_COMPLEX */
/* 696 */    0x0,                           /* 0 */
                                            NdrFcShort( 0xfffffffe7 ),  /* Offset= -
25 (672) */
                                            0x5b,                   /* FC_END */
/* 700 */
                                            0x11, 0x0,   /* FC_RP */
/* 702 */    NdrFcShort( 0xffffff10 ),      /* Offset= -240 (462) */
/* 704 */
                                            0x1b,                   /* FC_CARRAY
*/
                                            0x0,                    /* 0 */
/* 706 */    NdrFcShort( 0x1 ),             /* 1 */
/* 708 */    0x19,                          /* Corr desc:  field pointer, FC_ULONG
*/
                                            0x0,                    /*  */
/* 710 */    NdrFcShort( 0x0 ),             /* 0 */
/* 712 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 714 */    0x1,                           /* FC_BYTE */
                                            0x5b,                   /* FC_END */
/* 716 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 718 */    NdrFcShort( 0x10 ),            /* 16 */
/* 720 */    NdrFcShort( 0x0 ),             /* 0 */
/* 722 */    NdrFcShort( 0x6 ),             /* Offset= 6 (728) */
/* 724 */    0x8,                           /* FC_LONG */
                                            0x39,                   /* FC_ALIGNM8
*/
/* 726 */    0x36,                          /* FC_POINTER */
                                            0x5b,                   /* FC_END */
/* 728 */
                                            0x12, 0x0,   /* FC_UP */
/* 730 */    NdrFcShort( 0xffffffe6 ),      /* Offset= -26 (704) */
/* 732 */
                                            0x1b,                   /* FC_CARRAY
*/
                                            0x1,                    /* 1 */
/* 734 */    NdrFcShort( 0x2 ),             /* 2 */
/* 736 */    0x19,                          /* Corr desc:  field pointer, FC_ULONG
*/
                                            0x0,                    /*  */
/* 738 */    NdrFcShort( 0x0 ),             /* 0 */
/* 740 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 742 */    0x6,                           /* FC_SHORT */
                                            0x5b,                   /* FC_END */
/* 744 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 746 */    NdrFcShort( 0x10 ),            /* 16 */
/* 748 */    NdrFcShort( 0x0 ),             /* 0 */
/* 750 */    NdrFcShort( 0x6 ),             /* Offset= 6 (756) */
/* 752 */    0x8,                           /* FC_LONG */
                                            0x39,                   /* FC_ALIGNM8
*/
/* 754 */    0x36,                          /* FC_POINTER */
                                            0x5b,                   /* FC_END */
/* 756 */
                                            0x12, 0x0,   /* FC_UP */
/* 758 */    NdrFcShort( 0xffffffe6 ),      /* Offset= -26 (732) */
/* 760 */
                                            0x1b,                   /* FC_CARRAY
*/
                                            0x3,                    /* 3 */
/* 762 */    NdrFcShort( 0x4 ),             /* 4 */
/* 764 */    0x19,                          /* Corr desc:  field pointer, FC_ULONG
*/
                                            0x0,                    /*  */
/* 766 */    NdrFcShort( 0x0 ),             /* 0 */
/* 768 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 770 */    0x8,                           /* FC_LONG */
                                            0x5b,                   /* FC_END */
/* 772 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 774 */    NdrFcShort( 0x10 ),            /* 16 */
/* 776 */    NdrFcShort( 0x0 ),             /* 0 */
/* 778 */    NdrFcShort( 0x6 ),             /* Offset= 6 (784) */
/* 780 */    0x8,                           /* FC_LONG */
                                            0x39,                   /* FC_ALIGNM8
*/
/* 782 */    0x36,                          /* FC_POINTER */
                                            0x5b,                   /* FC_END */
/* 784 */
                                            0x12, 0x0,   /* FC_UP */
/* 786 */    NdrFcShort( 0xffffffe6 ),      /* Offset= -26 (760) */
/* 788 */
                                            0x1b,                   /* FC_CARRAY
*/
                                            0x7,                    /* 7 */
/* 790 */    NdrFcShort( 0x8 ),             /* 8 */
/* 792 */    0x19,                          /* Corr desc:  field pointer, FC_ULONG
*/
                                            0x0,                    /*  */
/* 794 */    NdrFcShort( 0x0 ),             /* 0 */
/* 796 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 798 */    0xb,                           /* FC_HYPER */
                                            0x5b,                   /* FC_END */
/* 800 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 802 */    NdrFcShort( 0x10 ),            /* 16 */
/* 804 */    NdrFcShort( 0x0 ),             /* 0 */
/* 806 */    NdrFcShort( 0x6 ),             /* Offset= 6 (812) */
/* 808 */    0x8,                           /* FC_LONG */
                                            0x39,                   /* FC_ALIGNM8
*/
/* 810 */    0x36,                          /* FC_POINTER */
                                            0x5b,                   /* FC_END */
/* 812 */
                                            0x12, 0x0,   /* FC_UP */
/* 814 */    NdrFcShort( 0xffffffe6 ),      /* Offset= -26 (788) */
/* 816 */
                                            0x15,                   /* FC_STRUCT
*/
                                            0x3,                    /* 3 */
/* 818 */    NdrFcShort( 0x8 ),             /* 8 */
/* 820 */    0x8,                           /* FC_LONG */
                                            0x8,                    /* FC_LONG */
/* 822 */    0x5c,                          /* FC_PAD */
                                            0x5b,                   /* FC_END */
/* 824 */
                                            0x1b,                   /* FC_CARRAY
*/
                                            0x3,                    /* 3 */
/* 826 */    NdrFcShort( 0x8 ),             /* 8 */
/* 828 */    0x7,                           /* Corr desc: FC_USHORT */
                                            0x0,                    /*  */
/* 830 */    NdrFcShort( 0xffc8 ),          /* -56 */
/* 832 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 834 */    0x4c,                          /* FC_EMBEDDED_COMPLEX */
                                            0x0,                    /* 0 */
/* 836 */    NdrFcShort( 0xfffffec ),       /* Offset= -20 (816) */
/* 838 */    0x5c,                          /* FC_PAD */
                                            0x5b,                   /* FC_END */
/* 840 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 842 */    NdrFcShort( 0x38 ),            /* 56 */
/* 844 */    NdrFcShort( 0xffffffec ),      /* Offset= -20 (824) */
/* 846 */    NdrFcShort( 0x0 ),             /* Offset= 0 (846) */
/* 848 */    0x6,                           /* FC_SHORT */
                                            0x6,                    /* FC_SHORT
*/
/* 850 */    0x38,                          /* FC_ALIGNM4 */
                                            0x8,                    /* FC_LONG */
/* 852 */    0x8,                           /* FC_LONG */
                                            0x4c,                   /*
FC_EMBEDDED_COMPLEX */
/* 854 */    0x4,                           /* 4 */
                                            NdrFcShort( 0xfffffe0d ),  /* Offset= -
499 (356) */
                                            0x5b,                   /* FC_END */
/* 858 */
                                            0x12, 0x0,   /* FC_UP */
/* 860 */    NdrFcShort( 0xffffff02 ),      /* Offset= -254 (606) */
/* 862 */
                                            0x12, 0x8,   /* FC_UP [simple_pointer]
*/
/* 864 */    0x1,                           /* FC_BYTE */
                                            0x5c,                   /* FC_PAD */
/* 866 */
                                            0x12, 0x8,   /* FC_UP [simple_pointer]
*/
/* 868 */    0x6,                           /* FC_SHORT */
                                            0x5c,                   /* FC_PAD */
/* 870 */
                                            0x12, 0x8,   /* FC_UP [simple_pointer]
*/
/* 872 */    0x8,                           /* FC_LONG */
                                            0x5c,                   /* FC_PAD */
```

```
/* 874 */
                                        0x12, 0x8,   /* FC_UP [simple_pointer]
*/
/* 876 */    0xa,                       /* FC_FLOAT */
                                        0x5c,                       /* FC_PAD */
/* 878 */
                                        0x12, 0x8,   /* FC_UP [simple_pointer]
*/
/* 880 */    0xc,                       /* FC_DOUBLE */
                                        0x5c,                       /* FC_PAD */
/* 882 */
                                        0x12, 0x0,   /* FC_UP */
/* 884 */    NdrFcShort( 0xfffffda4 ),  /* Offset= -604 (280) */
/* 886 */
                                        0x12, 0x10,  /* FC_UP [pointer_deref]
*/
/* 888 */    NdrFcShort( 0xfffffda6 ),  /* Offset= -602 (286) */
/* 890 */
                                        0x12, 0x10,  /* FC_UP [pointer_deref]
*/
/* 892 */    NdrFcShort( 0xfffffdbc ),  /* Offset= -580 (312) */
/* 894 */
                                        0x12, 0x10,  /* FC_UP [pointer_deref]
*/
/* 896 */    NdrFcShort( 0xfffffdca ),  /* Offset= -566 (330) */
/* 898 */
                                        0x12, 0x10,  /* FC_UP [pointer_deref]
*/
/* 900 */    NdrFcShort( 0xfffffdd8 ),  /* Offset= -552 (348) */
/* 902 */
                                        0x12, 0x10,  /* FC_UP [pointer_deref]
*/
/* 904 */    NdrFcShort( 0x2 ),         /* Offset= 2 (906) */
/* 906 */
                                        0x12, 0x0,   /* FC_UP */
/* 908 */    NdrFcShort( 0x16 ),        /* Offset= 22 (930) */
/* 910 */
                                        0x15,                       /* FC_STRUCT
*/
                                        0x7,                        /* 7 */
/* 912 */    NdrFcShort( 0x10 ),        /* 16 */
/* 914 */    0x6,                       /* FC_SHORT */
                                        0x1,                        /* FC_BYTE */
/* 916 */    0x1,                       /* FC_BYTE */
                                        0x38,                       /* FC_ALIGNM4
*/
/* 918 */    0x8,                       /* FC_LONG */
                                        0x39,                       /* FC_ALIGNM8
*/
/* 920 */    0xb,                       /* FC_HYPER */
                                        0x5b,                       /* FC_END */
/* 922 */
                                        0x12, 0x0,   /* FC_UP */
/* 924 */    NdrFcShort( 0xfffffff2 ),  /* Offset= -14 (910) */
/* 926 */
                                        0x12, 0x8,   /* FC_UP [simple_pointer]
*/
/* 928 */    0x2,                       /* FC_CHAR */
                                        0x5c,                       /* FC_PAD */
/* 930 */
                                        0x1a,                       /*
FC_BOGUS_STRUCT */
                                        0x7,                        /* 7 */
/* 932 */    NdrFcShort( 0x20 ),        /* 32 */
/* 934 */    NdrFcShort( 0x0 ),         /* 0 */
/* 936 */    NdrFcShort( 0x0 ),         /* Offset= 0 (936) */
/* 938 */    0x8,                       /* FC_LONG */
                                        0x8,                        /* FC_LONG */
/* 940 */    0x6,                       /* FC_SHORT */
                                        0x6,                        /* FC_SHORT
*/
/* 942 */    0x6,                       /* FC_SHORT */
                                        0x6,                        /* FC_SHORT
*/
/* 944 */    0x4c,                      /* FC_EMBEDDED_COMPLEX */
                                        0x0,                        /* 0 */
/* 946 */    NdrFcShort( 0xfffffc54 ),  /* Offset= -940 (6) */
/* 948 */    0x5c,                      /* FC_PAD */
                                        0x5b,                       /* FC_END */
/* 950 */    0xb4,                      /* FC_USER_MARSHAL */
                                        0x83,                       /* 131 */
/* 952 */    NdrFcShort( 0x0 ),         /* 0 */
/* 954 */    NdrFcShort( 0x18 ),        /* 24 */
/* 956 */    NdrFcShort( 0x0 ),         /* 0 */
/* 958 */    NdrFcShort( 0xfffffc44 ),  /* Offset= -956 (2) */
/* 960 */
                                        0x11, 0x4,   /* FC_RP
[alloced_on_stack] */
/* 962 */    NdrFcShort( 0x6 ),         /* Offset= 6 (968) */
/* 964 */
                                        0x13, 0x0,   /* FC_OP */
/* 966 */    NdrFcShort( 0xffffffdc ),  /* Offset= -36 (930) */
/* 968 */    0xb4,                      /* FC_USER_MARSHAL */
                                        0x83,                       /* 131 */
/* 970 */    NdrFcShort( 0x0 ),         /* 0 */
/* 972 */    NdrFcShort( 0x18 ),        /* 24 */
/* 974 */    NdrFcShort( 0x0 ),         /* 0 */
/* 976 */    NdrFcShort( 0xfffffff4 ),  /* Offset= -12 (964) */

                                        0x0
        }
    };

const CInterfaceProxyVtbl * _tpcc_com_ps_ProxyVtblList[] =
{
    ( CInterfaceProxyVtbl *) &_ITPCCProxyVtbl,
    0
};

const CInterfaceStubVtbl * _tpcc_com_ps_StubVtblList[] =
{
    ( CInterfaceStubVtbl *) &_ITPCCStubVtbl,
    0
};

PCInterfaceName const _tpcc_com_ps_InterfaceNamesList[] =
{
    "ITPCC",
    0
};


#define _tpcc_com_ps_CHECK_IID(n)       IID_GENERIC_CHECK_IID( _tpcc_com_ps,
pIID, n)

int __stdcall _tpcc_com_ps_IID_Lookup( const IID * pIID, int * pIndex )
{

    if(!_tpcc_com_ps_CHECK_IID(0))
        {
        *pIndex = 0;
        return 1;
        }

    return 0;
}

const ExtendedProxyFileInfo tpcc_com_ps_ProxyFileInfo =
{
    (PCInterfaceProxyVtblList *) & _tpcc_com_ps_ProxyVtblList,
    (PCInterfaceStubVtblList *) & _tpcc_com_ps_StubVtblList,
    (const PCInterfaceName * ) & _tpcc_com_ps_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_AXP64)*/
```

Appendix B : Database Design

Build Scripts

setup.cmd

```
::@ECHO OFF

@ECHO
********************************************************************************
@ECHO *
*
@ECHO *  Microsoft TPC-C V3 Benchmark Kit Ver. IA-64
*
@ECHO *
*
@ECHO
********************************************************************************

@rem if not '%PROCESSOR_ARCHITECTURE%' == 'IA64' goto wrongOS

@if '%1'=='' goto usage
@if '%2'=='' goto usage
@if '%3'=='' goto usage
@if not '%4'=='' if not '%4' == 'normal' if not '%4' == 'scale_down' goto usage

:: Cleanup any old .err files
@@if exist logs\*.err del logs\*.err
             >nul

@if  '%3'=='full' goto start
@if  '%3'=='builddb' goto builddb
@if  '%3'=='objects' goto objects
@if  '%3'=='bulkload' goto bulkload
@if  '%3'=='objectsfull' goto objects
@if  '%3'=='bulkloadfull' goto bulkload
@if  '%3'=='backup' goto backup
goto usage

:start
:: Cleanup the logs directory...
@if exist logs\version.log del logs\version.log
             >nul
@if exist logs\db.log del logs\db.log
             >nul
@if exist logs\objects.log del logs\objects.log
             >nul
@if exist logs\objects.log del logs\objects.log
             >nul
@if exist logs\bulkload.log del logs\bulkload.log
             >nul
@if exist logs\backup.log del logs\backup.log
             >nul

@osql -Usa -P -S%1 -Q"select @@version"
             >  logs\version.log
@osql -Usa -P -S%1 -Q"select getdate()"
             >> logs\version.log

:builddb
@@if exist logs\db.log del logs\db.log
             >nul
@ECHO Removing any existing TPCC database and backup devices...
@osql -Usa -P -S%1 -Usa -P < scripts\%2.war\database\removedb.sql  >
logs\db.log
@ECHO Creating Backup Device(s)...
@osql -Usa -P -S%1 -Usa -P < scripts\%2.war\database\backupdev.sql >>
logs\db.log
@if errorlevel 1 goto CREATE_ERROR
@ECHO Building database files and database...
@osql -Usa -P -S%1 -b -Usa -P < scripts\%2.war\database\createdb.sql
             >> logs\db.log
@if errorlevel 1 goto CREATE_ERROR
@ECHO Database build complete.
@if  '%3'=='full' goto objects
goto end

:objects
@if exist logs\objects.log del logs\objects.log
             >nul
@ECHO Creating TPC-C database tables...
@osql -Usa -P -S%1 -b -Usa -P < scripts\%2.war\ddl\tables.sql
             >  logs\objects.log
@if errorlevel 1 goto TABLES_ERROR
@ECHO Creating database objects...
@osql -Usa -P -S%1 -b -Usa -P < scripts\dml\neword.sql
             >> logs\objects.log
@if errorlevel 1 goto NEWORDER_ERROR
@osql -Usa -P -S%1 -b -Usa -P < scripts\dml\payment.sql
             >> logs\objects.log
@if errorlevel 1 goto PAYMENT_ERROR
@osql -Usa -P -S%1 -b -Usa -P < scripts\dml\ordstat.sql
             >> logs\objects.log
@if errorlevel 1 goto ORDERSTATUS_ERROR
@osql -Usa -P -S%1 -b -Usa -P < scripts\dml\delivery.sql
             >> logs\objects.log
@if errorlevel 1 goto DELIVERY_ERROR
@osql -Usa -P -S%1 -b -Usa -P < scripts\dml\stocklev.sql
             >> logs\objects.log
@if errorlevel 1 goto STOCKLEVEL_ERROR
@osql -Usa -P -S%1 -Usa -P < scripts\dml\version.sql
             >> logs\objects.log
@ECHO Database object creation complete.
@if  '%3'=='full' goto bulkload
@if  '%3'=='objectsfull' goto bulkload
goto end

:bulkload
@if exist logs\bulkload.log del logs\bulkload.log
             >nul
@ECHO Setting database options before load...
@osql -Usa -P -S%1 -b -Usa -P < scripts\utility\dbopt1.sql
             >> logs\objects.log
@if errorlevel 1 goto DBOPT1_ERROR
@ECHO Beginning data load and index creation...
@osql -Usa -P -S%1 -b -Usa -P < scripts\%2.war\ddl\idxhiscl.sql
             > logs\idxhiscl.log
@if '%4'==''     loader\IA64\bin\tpccldr -S%1 -W%2 -flogs\bulkload.log -
dscripts\%2.war\ddl -c0
@if errorlevel 1 goto END
@if '%4'=='normal' loader\IA64\bin\tpccldr -S%1 -W%2 -flogs\bulkload.log -
dscripts\%2.war\ddl -c0
@if errorlevel 1 goto END
@if '%4'=='scale_down' loader\IA64\bin\tpccldr -S%1 -W%2 -flogs\bulkload.log -
dscripts\%2.war\ddl -c1
@if errorlevel 1 goto END
goto bulkloaddone
:bulkloaddone
@ECHO Setting database options after load...
@osql -Usa -P -S%1 -b -Usa -P < scripts\utility\dbopt2.sql
             >> logs\bulkload.log
@if errorlevel 1 goto DBOPT2_ERROR
@ECHO Data load and index creation complete.

@ECHO.
@ECHO Calculating initial database space usage...
@cd..\acid\space
@call space.cmd %1
@cd..\..\setup

@if  '%3'=='full' goto backup
@if  '%3'=='objectsfull' goto backup
@if  '%3'=='bulkloadfull' goto backup
goto end

:backup
@if exist logs\backup.log del logs\backup.log
             >nul
@ECHO Backing up database...
@osql -Usa -P -S%1 -b -Usa -P < scripts\%2.war\database\backup.sql >
logs\backup.log
@if errorlevel 1 goto BACKUP_ERROR
@ECHO Database backup complete.
@if  '%3'=='full' goto verifyload
@if  '%3'=='objectsfull' goto verifyload
@if  '%3'=='bulkloadfull' goto verifyload
goto complete

:verifyload
@if exist logs\verifyload.log del logs\verifyload.log
             >nul
@Echo Verifying TPC-C database load...
@osql -Usa -P -S%1 -b -Usa -P < scripts\utility\verifytpccload.sql
             >  logs\verifyload.log
@if errorlevel 1 goto VERIFY_ERROR
@ECHO Check logs\verifyload.log to verify database load.

:complete
@ECHO
********************************************************************************
@ECHO *
*
@ECHO *  TPC-C V3 build complete.  Check logs directory for setup errors.
*
@ECHO *
*
@ECHO
********************************************************************************

goto end

:usage
@ECHO ********************************************************************************
@ECHO *                                                                              *
@ECHO *  The TPC-C setup command file requires the following parameters:              *
@ECHO *                                                                              *
@ECHO *  setup SERVER NUMWAR BLDOPT VERSION DBTYPE                                    *
@ECHO *                                                                              *
@ECHO *      SERVER  = machine name of server (use "" for local server)              *
@ECHO *      NUMWAR  = number of warehouses                                          *
@ECHO *      BLDOPT  = full, builddb, objects, objectsfull, bulkload,                *
@ECHO *                bulkloadfull, or backup                                       *
@ECHO *      DBTYPE  = normal or scale_down                                          *
@ECHO *                                                                              *
@ECHO *  Note #1: the BLDOPT and VERSION parameters are case sensitive.              *
@ECHO *                                                                              *
@ECHO *  Note #2: the DBTYPE is optional.  If no DBTYPE is specified, SETUP          *
@ECHO *           will default to NORMAL.                                            *
@ECHO *                                                                              *
@ECHO *  Example:                                                                    *
@ECHO *                                                                              *
@ECHO *  The following command would be used to build a complete 200                 *
@ECHO *  warehouse database on SQL Server 7.0 runnning on server \\myserver.         *
@ECHO *                                                                              *
@ECHO *      SETUP myserver 200 full                                                 *
@ECHO *                                                                              *
@ECHO *  NOTE 1: This command file does a backup of the database by default          *
@ECHO *  after the database build process is complete.  If you do not wish          *
@ECHO *  to make a backup (strongly discouraged), you must edit this file           *
@ECHO *  and comment that section out.  Also, if you need to run the dbcheck        *
@ECHO *  and the dbtables scripts on the fresh database load for an audit,          *
@ECHO *  you must either run them manually or edit this file to include them.       *
@ECHO *                                                                              *
@ECHO *  NOTE 2: The TPC-C setup program supports both Intel and Alpha               *
@ECHO *  systems.  It queries the %PROCESSOR_ARCHITECTURE% environment               *
@ECHO *  variable and runs the appropriate executables.                              *
@ECHO *                                                                              *
@ECHO ********************************************************************************
@goto end


:CREATE_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error in the database/backup device creation.
@echo.
@echo Check your CREATEDB.SQL, BACKUPDEV.SQL, LOGS\DB.LOG, and the
@echo SQL Server errorlog (PROGRAM FILES\MICROSOFT SQL
SERVER\MSSQL\LOG\ERRORLOG) for details.
@echo.
@goto END

:TABLES_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error in the table creation.
@echo.
@echo Verify that the FileGroup names specified in CREATEDB.SQL
@echo match those specified in SCRIPTS\DDL\TABLES.SQL.
@echo.
@goto END
```

```
:NEWORDER_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error in the creation of the New Order stored procedure.
@echo.
@echo Check your LOGS\OBJECTS.LOG, SCRIPTS\DML\NEWORD.SQL and the
@echo SQL Server errorlog (PROGRAM FILES\MICROSOFT SQL
SERVER\MSSQL\LOG\ERRORLOG) for details.
@echo.
@goto END

:PAYMENT_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error in the creation of the Payment stored procedure.
@echo.
@echo Check your LOGS\OBJECTS.LOG, SCRIPTS\DML\PAYMENT.SQL and the
@echo SQL Server errorlog (PROGRAM FILES\MICROSOFT SQL
SERVER\MSSQL\LOG\ERRORLOG) for details.
@echo.
@goto END

:ORDERSTATUS_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error in the creation of the Order Status stored procedure.
@echo.
@echo Check your LOGS\OBJECTS.LOG, SCRIPTS\DML\ORDSTAT.SQL and the
@echo SQL Server errorlog (PROGRAM FILES\MICROSOFT SQL
SERVER\MSSQL\LOG\ERRORLOG) for details.
@echo.
@goto END

:DELIVERY_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error in the creation of the Delivery stored procedure.
@echo.
@echo Check your LOGS\OBJECTS.LOG, SCRIPTS\DML\DELIVERY.SQL and the
@echo SQL Server errorlog (PROGRAM FILES\MICROSOFT SQL
SERVER\MSSQL\LOG\ERRORLOG) for details.
@echo.
@goto END

:STOCKLEVEL_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error in the creation of the Stock Level stored procedure.
@echo.
@echo Check your LOGS\OBJECTS.LOG, SCRIPTS\DML\STOCKLEV.SQL and the
@echo SQL Server errorlog (PROGRAM FILES\MICROSOFT SQL
SERVER\MSSQL\LOG\ERRORLOG) for details.
@echo.
@goto END

:DBOPT1_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error setting the database options before load.
@echo.
@echo Check your LOGS\OBJECTS.LOG and the SQL Server errorlog
@echo (PROGRAM FILES\MICROSOFT SQL SERVER\MSSQL\LOG\ERRORLOG) for details.
@echo.
@goto END

:DBOPT2_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error setting the database options after load.
@echo.
@echo Check your LOGS\OBJECTS.LOG and the SQL Server errorlog
@echo (MSSQL7\LOG\ERRORLOG) for details.
@echo.
@goto END

:BACKUP_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error backing up the database after load.
@echo.
@echo Check your LOGS\BACKUP.LOG and the SQL Server errorlog
@echo (PROGRAM FILES\MICROSOFT SQL SERVER\MSSQL\LOG\ERRORLOG) for details.
@echo.
@goto END

:VERIFY_ERROR
@echo.
@echo BUILD ABORTED!
@echo.
@echo There was an error performing TPC-C database verification.
@echo.
@echo Check your LOGS\VERIFYLOAD.LOG and the SQL Server errorlog
@echo (MSSQL7\LOG\ERRORLOG) for details.
@echo.
@goto END

:WRONGOS
@echo.
@echo BUILD ABORTED!
@echo.
@echo This version of the Microsoft TPC-C Kit is for use with SQL Server IA-64
ONLY!
@echo Please check http://mssqlperf.rte.microsoft.com for the latest Microsoft
TPC-C
@echo kit for use on non IA-64 systems.
@echo.
@goto END

:end

echo on
```

backup.sql

```
dump database tpcc to
tpccback01,
tpccback02,
tpccback03,
tpccback04,
tpccback05,
tpccback06,
tpccback07,
tpccback08,
tpccback09,
tpccback10,
tpccback11,
tpccback12,
tpccback13,
tpccback14,
tpccback15,
tpccback16,
tpccback17,
tpccback18,
tpccback19,
tpccback20,
tpccback21,
tpccback22,
tpccback23,
tpccback24,
tpccback25,
tpccback26,
tpccback27
with init, stats=1

dump database tpcc to
tpccback28,
tpccback29,
tpccback30,
tpccback31,
tpccback32,
tpccback33,
tpccback34,
tpccback35,
tpccback36,
tpccback37,
tpccback38,
tpccback39,
tpccback40,
tpccback41,
tpccback42,
tpccback43,
tpccback44,
tpccback45,
tpccback46,
tpccback47,
tpccback48,
tpccback49,
tpccback50,
tpccback51,
tpccback52,
tpccback53,
tpccback54
with init, stats = 1
go

dump database tpcc to
tpccback55,
tpccback56,
tpccback57,
tpccback58,
tpccback59,
tpccback60,
tpccback61,
tpccback62,
tpccback63,
tpccback64,
tpccback65,
tpccback66,
tpccback67,
tpccback68,
tpccback69,
tpccback70,
tpccback71,
tpccback72,
tpccback73,
tpccback74,
tpccback75,
tpccback76,
tpccback77,
tpccback78,
tpccback79,
tpccback80
with init, stats = 1
go
```

backupdev.sql

```
--  File:     BACKUPDEVB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates tpcc database Backup Devices


use master
go

--  create backup devices

exec sp_addumpdevice 'disk','tpccback01','z:\dev\b001\tpccback01.dmp'
exec sp_addumpdevice 'disk','tpccback02','z:\dev\b002\tpccback02.dmp'
exec sp_addumpdevice 'disk','tpccback03','z:\dev\b003\tpccback03.dmp'
exec sp_addumpdevice 'disk','tpccback04','z:\dev\b004\tpccback04.dmp'
exec sp_addumpdevice 'disk','tpccback05','z:\dev\b005\tpccback05.dmp'
exec sp_addumpdevice 'disk','tpccback06','z:\dev\b006\tpccback06.dmp'
exec sp_addumpdevice 'disk','tpccback07','z:\dev\b007\tpccback07.dmp'
exec sp_addumpdevice 'disk','tpccback08','z:\dev\b008\tpccback08.dmp'
exec sp_addumpdevice 'disk','tpccback09','z:\dev\b009\tpccback09.dmp'
exec sp_addumpdevice 'disk','tpccback10','z:\dev\b010\tpccback10.dmp'
exec sp_addumpdevice 'disk','tpccback11','z:\dev\b011\tpccback11.dmp'
exec sp_addumpdevice 'disk','tpccback12','z:\dev\b012\tpccback12.dmp'
exec sp_addumpdevice 'disk','tpccback13','z:\dev\b013\tpccback13.dmp'
exec sp_addumpdevice 'disk','tpccback14','z:\dev\b014\tpccback14.dmp'
exec sp_addumpdevice 'disk','tpccback15','z:\dev\b015\tpccback15.dmp'
exec sp_addumpdevice 'disk','tpccback16','z:\dev\b016\tpccback16.dmp'
exec sp_addumpdevice 'disk','tpccback17','z:\dev\b017\tpccback17.dmp'
exec sp_addumpdevice 'disk','tpccback18','z:\dev\b018\tpccback18.dmp'
exec sp_addumpdevice 'disk','tpccback19','z:\dev\b019\tpccback19.dmp'
exec sp_addumpdevice 'disk','tpccback20','z:\dev\b020\tpccback20.dmp'
```

```
exec sp_addumpdevice 'disk','tpccback21','z:\dev\b021\tpccback21.dmp'
exec sp_addumpdevice 'disk','tpccback22','z:\dev\b022\tpccback22.dmp'
exec sp_addumpdevice 'disk','tpccback23','z:\dev\b023\tpccback23.dmp'
exec sp_addumpdevice 'disk','tpccback24','z:\dev\b024\tpccback24.dmp'
exec sp_addumpdevice 'disk','tpccback25','z:\dev\b025\tpccback25.dmp'
exec sp_addumpdevice 'disk','tpccback26','z:\dev\b026\tpccback26.dmp'
exec sp_addumpdevice 'disk','tpccback27','z:\dev\b027\tpccback27.dmp'
exec sp_addumpdevice 'disk','tpccback28','z:\dev\b028\tpccback28.dmp'
exec sp_addumpdevice 'disk','tpccback29','z:\dev\b029\tpccback29.dmp'
exec sp_addumpdevice 'disk','tpccback30','z:\dev\b030\tpccback30.dmp'
exec sp_addumpdevice 'disk','tpccback31','z:\dev\b031\tpccback31.dmp'
exec sp_addumpdevice 'disk','tpccback32','z:\dev\b032\tpccback32.dmp'
exec sp_addumpdevice 'disk','tpccback33','z:\dev\b033\tpccback33.dmp'
exec sp_addumpdevice 'disk','tpccback34','z:\dev\b034\tpccback34.dmp'
exec sp_addumpdevice 'disk','tpccback35','z:\dev\b035\tpccback35.dmp'
exec sp_addumpdevice 'disk','tpccback36','z:\dev\b036\tpccback36.dmp'
exec sp_addumpdevice 'disk','tpccback37','z:\dev\b037\tpccback37.dmp'
exec sp_addumpdevice 'disk','tpccback38','z:\dev\b038\tpccback38.dmp'
exec sp_addumpdevice 'disk','tpccback39','z:\dev\b039\tpccback39.dmp'
exec sp_addumpdevice 'disk','tpccback40','z:\dev\b040\tpccback40.dmp'
exec sp_addumpdevice 'disk','tpccback41','z:\dev\b041\tpccback41.dmp'
exec sp_addumpdevice 'disk','tpccback42','z:\dev\b042\tpccback42.dmp'
exec sp_addumpdevice 'disk','tpccback43','z:\dev\b043\tpccback43.dmp'
exec sp_addumpdevice 'disk','tpccback44','z:\dev\b044\tpccback44.dmp'
exec sp_addumpdevice 'disk','tpccback45','z:\dev\b045\tpccback45.dmp'
exec sp_addumpdevice 'disk','tpccback46','z:\dev\b046\tpccback46.dmp'
exec sp_addumpdevice 'disk','tpccback47','z:\dev\b047\tpccback47.dmp'
exec sp_addumpdevice 'disk','tpccback48','z:\dev\b048\tpccback48.dmp'
exec sp_addumpdevice 'disk','tpccback49','z:\dev\b049\tpccback49.dmp'
exec sp_addumpdevice 'disk','tpccback50','z:\dev\b050\tpccback50.dmp'
exec sp_addumpdevice 'disk','tpccback51','z:\dev\b051\tpccback51.dmp'
exec sp_addumpdevice 'disk','tpccback52','z:\dev\b052\tpccback52.dmp'
exec sp_addumpdevice 'disk','tpccback53','z:\dev\b053\tpccback53.dmp'
exec sp_addumpdevice 'disk','tpccback54','z:\dev\b054\tpccback54.dmp'
exec sp_addumpdevice 'disk','tpccback55','z:\dev\b055\tpccback55.dmp'
exec sp_addumpdevice 'disk','tpccback56','z:\dev\b056\tpccback56.dmp'
exec sp_addumpdevice 'disk','tpccback57','z:\dev\b057\tpccback57.dmp'
exec sp_addumpdevice 'disk','tpccback58','z:\dev\b058\tpccback58.dmp'
exec sp_addumpdevice 'disk','tpccback59','z:\dev\b059\tpccback59.dmp'
exec sp_addumpdevice 'disk','tpccback60','z:\dev\b060\tpccback60.dmp'
exec sp_addumpdevice 'disk','tpccback61','z:\dev\b061\tpccback61.dmp'
exec sp_addumpdevice 'disk','tpccback62','z:\dev\b062\tpccback62.dmp'
exec sp_addumpdevice 'disk','tpccback63','z:\dev\b063\tpccback63.dmp'
exec sp_addumpdevice 'disk','tpccback64','z:\dev\b064\tpccback64.dmp'
exec sp_addumpdevice 'disk','tpccback65','z:\dev\b065\tpccback65.dmp'
exec sp_addumpdevice 'disk','tpccback66','z:\dev\b066\tpccback66.dmp'
exec sp_addumpdevice 'disk','tpccback67','z:\dev\b067\tpccback67.dmp'
exec sp_addumpdevice 'disk','tpccback68','z:\dev\b068\tpccback68.dmp'
exec sp_addumpdevice 'disk','tpccback69','z:\dev\b069\tpccback69.dmp'
exec sp_addumpdevice 'disk','tpccback70','z:\dev\b070\tpccback70.dmp'
exec sp_addumpdevice 'disk','tpccback71','z:\dev\b071\tpccback71.dmp'
exec sp_addumpdevice 'disk','tpccback72','z:\dev\b072\tpccback72.dmp'
exec sp_addumpdevice 'disk','tpccback73','z:\dev\b073\tpccback73.dmp'
exec sp_addumpdevice 'disk','tpccback74','z:\dev\b074\tpccback74.dmp'
exec sp_addumpdevice 'disk','tpccback75','z:\dev\b075\tpccback75.dmp'
exec sp_addumpdevice 'disk','tpccback76','z:\dev\b076\tpccback76.dmp'
exec sp_addumpdevice 'disk','tpccback77','z:\dev\b077\tpccback77.dmp'
exec sp_addumpdevice 'disk','tpccback78','z:\dev\b078\tpccback78.dmp'
exec sp_addumpdevice 'disk','tpccback79','z:\dev\b079\tpccback79.dmp'
exec sp_addumpdevice 'disk','tpccback80','z:\dev\b080\tpccback80.dmp'
go
```

createdb.sql

```
--  File:     CREATEDB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates tpcc database and backup files


use master
go

--           Create temporary table for timing

if exists ( select name from sysobjects where name = 'tpcc_timer' )
            drop table tpcc_timer
go

create table tpcc_timer
(
            start_date                                          char(30),
            end_date                                            char(30)
)

insert      into tpcc_timer values (0,0)
go

--          Store starting time

update      tpcc_timer
set         start_date   = (select convert(char(30), getdate(),9))
go

--  create main database files

CREATE DATABASE tpcc
ON PRIMARY
(           NAME                        = MSSQL_tpcc_root,
            FILENAME      = "Z:\MSSQL_tpcc_root.mdf",
            SIZE                        = 8MB,
            FILEGROWTH    = 0),
FILEGROUP     MSSQL_misc_fg
(NAME=MSSQL_misc01, FILENAME='z:\dev\m001\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc02, FILENAME='z:\dev\m002\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc03, FILENAME='z:\dev\m003\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc04, FILENAME='z:\dev\m004\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc05, FILENAME='z:\dev\m005\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc06, FILENAME='z:\dev\m006\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc07, FILENAME='z:\dev\m007\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc08, FILENAME='z:\dev\m008\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc09, FILENAME='z:\dev\m009\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc10, FILENAME='z:\dev\m010\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc11, FILENAME='z:\dev\m011\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc12, FILENAME='z:\dev\m012\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc13, FILENAME='z:\dev\m013\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc14, FILENAME='z:\dev\m014\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc15, FILENAME='z:\dev\m015\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc16, FILENAME='z:\dev\m016\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc17, FILENAME='z:\dev\m017\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc18, FILENAME='z:\dev\m018\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc19, FILENAME='z:\dev\m019\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc20, FILENAME='z:\dev\m020\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc21, FILENAME='z:\dev\m021\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc22, FILENAME='z:\dev\m022\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc23, FILENAME='z:\dev\m023\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc24, FILENAME='z:\dev\m024\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc25, FILENAME='z:\dev\m025\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc26, FILENAME='z:\dev\m026\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc27, FILENAME='z:\dev\m027\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc28, FILENAME='z:\dev\m028\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc29, FILENAME='z:\dev\m029\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc30, FILENAME='z:\dev\m030\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc31, FILENAME='z:\dev\m031\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc32, FILENAME='z:\dev\m032\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc33, FILENAME='z:\dev\m033\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc34, FILENAME='z:\dev\m034\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc35, FILENAME='z:\dev\m035\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc36, FILENAME='z:\dev\m036\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc37, FILENAME='z:\dev\m037\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc38, FILENAME='z:\dev\m038\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc39, FILENAME='z:\dev\m039\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc40, FILENAME='z:\dev\m040\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc41, FILENAME='z:\dev\m041\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc42, FILENAME='z:\dev\m042\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc43, FILENAME='z:\dev\m043\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc44, FILENAME='z:\dev\m044\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc45, FILENAME='z:\dev\m045\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc46, FILENAME='z:\dev\m046\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc47, FILENAME='z:\dev\m047\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc48, FILENAME='z:\dev\m048\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc49, FILENAME='z:\dev\m049\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc50, FILENAME='z:\dev\m050\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc51, FILENAME='z:\dev\m051\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc52, FILENAME='z:\dev\m052\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc53, FILENAME='z:\dev\m053\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc54, FILENAME='z:\dev\m054\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc55, FILENAME='z:\dev\m055\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc56, FILENAME='z:\dev\m056\', SIZE=15000MB, FILEGROWTH=0),
(NAME=MSSQL_misc57, FILENAME='z:\dev\m057\', SIZE=15000MB, FILEGROWTH=0),
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LOG ON
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(NAME=MSSQL_tpcc_log2, FILENAME="z:\dev\log2\", SIZE=200000MB, FILEGROWTH=0)
COLLATE Latin1_General_BIN
go

-- Store ending time
update       tpcc_timer
set          end_date     = (select convert(char(30), getdate(),9))
go

select "Elapsed time (in seconds): ", datediff(second,(select start_date from
tpcc_timer),(select end_date from tpcc_timer))

--           remove temporary table

if exists ( select name from sysobjects where name = 'tpcc_timer' )
             drop table tpcc_timer
go
```

dbopt1.sql

```
--  File:     DBOPT1.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Sets database options for data load


use master
go

exec sp_dboption tpcc,'select into/bulkcopy',true
exec sp_dboption tpcc,'trunc. log on chkpt.',true
exec sp_dboption tpcc,'torn page detection',false
go

use tpcc
go

checkpoint
go
```

dbopt2.sql

```
--  File:     DBOPT2.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Resets database options after data load

exec sp_dboption tpcc,'select into/bulkcopy',false
exec sp_dboption tpcc,'trunc. log on chkpt.',false
exec sp_dboption tpcc,'torn page detection',false
GO

USE tpcc
GO
```

```
CHECKPOINT
GO

sp_configure 'allow updates',1
GO

RECONFIGURE WITH OVERRIDE
GO

DECLARE      @msg                      varchar(50)

--                                          --
--        OPTIONS FOR SQL SERVER 2000       --
-- Set option values for user-defined indexes --
--                                          --

SET          @msg         = ' '
PRINT        @msg
SET          @msg         = 'Setting SQL Server indexoptions'
PRINT        @msg
SET          @msg         = ' '
PRINT        @msg

EXEC sp_indexoption       'customer',   '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',
             TRUE
GO

Print ' '
Print '******************'
Print 'Pre-specified Locking Hierarchy:'
Print '        Lockflag = 0 ==> No pre-specified hierarchy'
Print '   Lockflag = 1 ==> Lock at Page-level then Table-level'
Print '   Lockflag = 2 ==> Lock at Row-level then Table-level'
Print '   Lockflag = 3 ==> Lock at Table-level'
Print ' '

SELECT       name,lockflags
FROM         sysindexes
WHERE        object_id('warehouse')     = id OR
             object_id('district')      = id OR
             object_id('customer')      = id OR
             object_id('stock')         = id OR
             object_id('orders')        = id OR
             object_id('order_line')    = id OR
             object_id('history')       = id OR
             object_id('new_order')     = id OR
             object_id('item')          = id
ORDER        BY lockflags asc
GO

sp_configure 'allow updates',0
GO

RECONFIGURE WITH OVERRIDE
GO

EXEC sp_dboption tpcc,     'auto update statistics',  FALSE
EXEC sp_dboption tpcc,     'auto create statistics',  FALSE
GO

EXEC sp_tableoption       'district',  'pintable',true
EXEC sp_tableoption       'warehouse', 'pintable',true
EXEC sp_tableoption       'new_order', 'pintable',true
EXEC sp_tableoption       'item',                   'pintable',true
GO
```

idxcuscl.sql

```
--  File:     IDXCUSCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on customer table

use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where name = 'customer_c1' )
             drop index customer.customer_c1

create unique clustered index customer_c1 on customer(c_w_id, c_d_id, c_id)
             on MSSQL_cs_fg

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

go
```

idxcusnc.sql

```
--  File:     IDXCUSNC.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates non-clustered index on customer table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where  name = 'customer_nc1' )
             drop index customer.customer_nc1

create unique nonclustered index customer_nc1 on customer(c_w_id, c_d_id, c_last,
c_first, c_id)
             on MSSQL_cs_fg

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

go
```

idxdiscl.sql

```
--  File:     IDXDISCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on district table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes 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 MSSQL_misc_fg

select @enddate = getdate()
```

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

go
```

idxhiscl.sql

```
--  File:     IDXHISCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on history table
--
--  CAUTION:  ****************************************
--  CAUTION:  This index is only beneficial for systems
--  CAUTION:  with 8 or more processors.
--  CAUTION:  It may negatively impact performance on
--  CAUTION:  on systems with less than 8 processors.
--  CAUTION:  ****************************************


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select 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 MSSQL_misc_fg

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

go
```

idxitmcl.sql

```
--  File:     IDXITMCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on item table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where  name = 'item_c1' )
             drop index item.item_c1

create unique clustered index item_c1 on item(i_id)
             on MSSQL_misc_fg

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

go
```

idxnodcl.sql

```
--  File:     IDXNODCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on new_order table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where  name = 'new_order_c1' )
             drop index new_order.new_order_c1

create unique clustered index new_order_c1 on new_order(no_w_id, no_d_id,
no_o_id)
             on MSSQL_misc_fg

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

go
```

idxodlcl.sql

```
--  File:     IDXODLCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on order_line table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where  name = 'order_line_c1' )
             drop index order_line.order_line_c1

create unique clustered index order_line_c1 on order_line(ol_w_id, ol_d_id,
ol_o_id, ol_number)
             on MSSQL_misc_fg

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

go
```

idxordcl.sql

```
--  File:     IDXORDCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on orders table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where  name = 'orders_c1' )
             drop index orders.orders_c1

create unique clustered index orders_c1 on orders(o_w_id, o_d_id, o_id)
             on MSSQL_misc_fg

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

go
```

idxordnc.sql

```
--  File:     IDXORDNC.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates non-clustered index on orders table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where  name = 'orders_nc1' )
             drop index orders.orders_nc1

create index orders_nc1 on orders(o_w_id, o_d_id, o_c_id, o_id)
             on MSSQL_misc_fg

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

go
```

idxstkcl.sql

```
--  File:     IDXSTKCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on stock table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where  name = 'stock_c1' )
             drop index stock.stock_c1

create unique clustered index stock_c1 on stock(s_i_id, s_w_id)
             on MSSQL_cs_fg

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

go
```

idxwarcl.sql

```
--  File:     IDXWARCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on warehouse table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where name = 'warehouse_c1' )
             drop index warehouse.warehouse_c1

create unique clustered index warehouse_c1 on warehouse(w_id)
             with fillfactor=100 on MSSQL_misc_fg

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

go
```

removedb.sql

```
--  File:     REMOVEDB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Removes tpcc database and backup files


use master
go

--  remove any existing database and backup files

exec sp_dbremove tpcc, dropdev
go

exec sp_dropdevice 'tpccback01'
exec sp_dropdevice 'tpccback02'
exec sp_dropdevice 'tpccback03'
exec sp_dropdevice 'tpccback04'
exec sp_dropdevice 'tpccback05'
exec sp_dropdevice 'tpccback06'
exec sp_dropdevice 'tpccback07'
exec sp_dropdevice 'tpccback08'
exec sp_dropdevice 'tpccback09'
exec sp_dropdevice 'tpccback10'
exec sp_dropdevice 'tpccback11'
exec sp_dropdevice 'tpccback12'
exec sp_dropdevice 'tpccback13'
exec sp_dropdevice 'tpccback14'
exec sp_dropdevice 'tpccback15'
exec sp_dropdevice 'tpccback16'
exec sp_dropdevice 'tpccback17'
exec sp_dropdevice 'tpccback18'
exec sp_dropdevice 'tpccback19'
exec sp_dropdevice 'tpccback20'
exec sp_dropdevice 'tpccback21'
exec sp_dropdevice 'tpccback22'
exec sp_dropdevice 'tpccback23'
exec sp_dropdevice 'tpccback24'
exec sp_dropdevice 'tpccback25'
exec sp_dropdevice 'tpccback26'
exec sp_dropdevice 'tpccback27'
exec sp_dropdevice 'tpccback28'
exec sp_dropdevice 'tpccback29'
exec sp_dropdevice 'tpccback30'
exec sp_dropdevice 'tpccback31'
exec sp_dropdevice 'tpccback32'
exec sp_dropdevice 'tpccback33'
exec sp_dropdevice 'tpccback34'
exec sp_dropdevice 'tpccback35'
exec sp_dropdevice 'tpccback36'
exec sp_dropdevice 'tpccback37'
exec sp_dropdevice 'tpccback38'
exec sp_dropdevice 'tpccback39'
exec sp_dropdevice 'tpccback40'
exec sp_dropdevice 'tpccback41'
exec sp_dropdevice 'tpccback42'
exec sp_dropdevice 'tpccback43'
exec sp_dropdevice 'tpccback44'
exec sp_dropdevice 'tpccback45'
exec sp_dropdevice 'tpccback46'
exec sp_dropdevice 'tpccback47'
exec sp_dropdevice 'tpccback48'
exec sp_dropdevice 'tpccback49'
exec sp_dropdevice 'tpccback50'
exec sp_dropdevice 'tpccback51'
exec sp_dropdevice 'tpccback52'
exec sp_dropdevice 'tpccback53'
exec sp_dropdevice 'tpccback54'
exec sp_dropdevice 'tpccback55'
exec sp_dropdevice 'tpccback56'
exec sp_dropdevice 'tpccback57'
exec sp_dropdevice 'tpccback58'
exec sp_dropdevice 'tpccback59'
exec sp_dropdevice 'tpccback60'
exec sp_dropdevice 'tpccback61'
exec sp_dropdevice 'tpccback62'
exec sp_dropdevice 'tpccback63'
exec sp_dropdevice 'tpccback64'
exec sp_dropdevice 'tpccback65'
exec sp_dropdevice 'tpccback66'
exec sp_dropdevice 'tpccback67'
exec sp_dropdevice 'tpccback68'
exec sp_dropdevice 'tpccback69'
exec sp_dropdevice 'tpccback70'
exec sp_dropdevice 'tpccback71'
exec sp_dropdevice 'tpccback72'
exec sp_dropdevice 'tpccback73'
exec sp_dropdevice 'tpccback74'
exec sp_dropdevice 'tpccback75'
exec sp_dropdevice 'tpccback76'
exec sp_dropdevice 'tpccback77'
exec sp_dropdevice 'tpccback78'
exec sp_dropdevice 'tpccback79'
exec sp_dropdevice 'tpccback80'
go
```

tables.sql

```
--  File:     TABLES.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.42
--            Copyright Microsoft, 2002
--  Purpose:  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_name                                  char(10),
             w_street_1                              char(20),
             w_street_2                              char(20),
             w_city                                  char(20),
             w_state                                 char(2),
             w_zip                                   char(9),
             w_tax                                   numeric(4,4),
             w_ytd                                   numeric(12,2)
) on MSSQL_misc_fg
go

create table district
(
             d_id                                    tinyint,
             d_w_id                                  int,
             d_name                                  char(10),
             d_street_1                              char(20),
             d_street_2                              char(20),
             d_city                                  char(20),
             d_state                                 char(2),
             d_zip                                   char(9),
             d_tax                                   numeric(4,4),
             d_ytd                                   numeric(12,2),
             d_next_o_id                             int
) on MSSQL_misc_fg
go

create table customer
(
             c_id                                    int,
             c_d_id                                  tinyint,
             c_w_id                                  int,
             c_first                                 char(16),
             c_middle                                char(2),
             c_last                                  char(16),
             c_street_1                              char(20),
             c_street_2                              char(20),
             c_city                                  char(20),
             c_state                                 char(2),
             c_zip                                   char(9),
             c_phone                                 char(16),
             c_since                                 datetime,
             c_credit                                char(2),
             c_credit_lim                            numeric(12,2),
             c_discount                              numeric(4,4),
             c_balance                               numeric(12,2),
             c_ytd_payment                           numeric(12,2),
             c_payment_cnt                           smallint,
             c_delivery_cnt                          smallint,
             c_data                                  char(500)
) on MSSQL_cs_fg
go

create table history
(
             h_c_id                                  int,
             h_c_d_id                                tinyint,
             h_c_w_id                                int,
             h_d_id                                  tinyint,
             h_w_id                                  int,
             h_date                                  datetime,
             h_amount                                numeric(6,2),
             h_data                                  char(24)
) on MSSQL_misc_fg
```

```
go

create table new_order
(
            no_o_id                                         int,
            no_d_id                                         tinyint,
            no_w_id                                         int
) on MSSQL_misc_fg
go

create table orders
(
            o_id                                            int,
            o_d_id                                          tinyint,
            o_w_id                                          int,
            o_c_id                                          int,
            o_entry_d                           datetime,
            o_carrier_id                        tinyint,
            o_ol_cnt                            tinyint,
            o_all_local                         tinyint
) on MSSQL_misc_fg
go

create table order_line
(
            ol_o_id                                         int,
            ol_d_id                                         tinyint,
            ol_w_id                                         int,
            ol_number                           tinyint,
            ol_i_id                                         int,
            ol_supply_w_id                                  int,
            ol_delivery_d                       datetime,
            ol_quantity                         smallint,
            ol_amount                           numeric(6,2),
            ol_dist_info                        char(24)
) on MSSQL_misc_fg
go

create table item
(
            i_id                                            int,
            i_im_id                                         int,
            i_name                                          char(24),
            i_price                                         numeric(5,2),
            i_data                                          char(50)
) on MSSQL_misc_fg
go

create table stock
(
            s_i_id                                          int,
            s_w_id                                          int,
            s_quantity                          smallint,
            s_dist_01                           char(24),
            s_dist_02                           char(24),
            s_dist_03                           char(24),
            s_dist_04                           char(24),
            s_dist_05                           char(24),
            s_dist_06                           char(24),
            s_dist_07                           char(24),
            s_dist_08                           char(24),
            s_dist_09                           char(24),
            s_dist_10                           char(24),
            s_ytd                                           int,
            s_order_cnt                         smallint,
            s_remote_cnt                        smallint,
            s_data                                          char(50)
) on MSSQL_cs_fg
go
```

VerifyTpccLoad.sql

```
--  File:     VERIFYTPCCLOAD.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Performs series of TPCC database checks to verify
--                that database load completed correctly

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

use tpcc
go

--          ************************************
--
--          Check rows per table from SYSINDEXES
--
--          ************************************

print       'WAREHOUSE TABLE'

select      rowcnt
from        sysindexes
where       id          = object_id("warehouse")
go

print       'DISTRICT TABLE = (10 * No of warehouses)'

select      rowcnt
from        sysindexes
where       id          =object_id("district")
go

print       'ITEM TABLE = 100,000'

select      rowcnt
from        sysindexes
where       id          =object_id("item")
go

print       'CUSTOMER TABLE = (30,000 * No of warehouses)'

select      rowcnt
from        sysindexes
where       id          =object_id("customer")
go

print 'ORDERS TABLE = (30,000 * No of warehouses)'

select      rowcnt
from        sysindexes
where       id          =object_id("orders")
go

print       'HISTORY TABLE = (30,000 * No of warehouses)'

select      rowcnt
from        sysindexes
where       id          =object_id("history")
go

print       'STOCK TABLE = (100,000 * No of warehouses)'

select      rowcnt
from        sysindexes
where       id          =object_id("stock")
go

print       'ORDER_LINE TABLE = (300,000 * No of warehouses + some change)'

select      rowcnt
from        sysindexes
where       id          =object_id("order_line")
go

print       'NEW_ORDER TABLE = (9000 * No of warehouses)'

select      rowcnt
from        sysindexes
where       id          =object_id("new_order")
go

--          *************
--
--          Check indices
--
--          *************

print '**************Index Check***************'

use tpcc
go

sp_helpindex customer
go

sp_helpindex stock
go

sp_helpindex district
go

sp_helpindex item
go

sp_helpindex new_order
go

sp_helpindex orders
go

sp_helpindex order_line
go

sp_helpindex warehouse
go

sp_helpindex history
go
```

Stored Procedures

delivery.sql

```
--  File:     DELIVERY.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.42
--            Copyright Microsoft, 2002
--  Purpose:  Creates delivery transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists (select name from sysobjects where name = 'tpcc_delivery' )
            drop procedure tpcc_delivery
go

create proc tpcc_delivery  @w_id           int,

                                                        @o_carrier_id   smallint
as


declare @d_id tinyint,
        @o_id int,
        @c_id int,
        @total              numeric(12,2),
        @oid1 int,
        @oid2 int,
        @oid3 int,
        @oid4 int,
        @oid5 int,
        @oid6 int,
        @oid7 int,
        @oid8 int,
        @oid9 int,
        @oid10              int

select @d_id = 0

begin tran d

            while (@d_id < 10)
            begin

                  select            @d_id  = @d_id + 1,
                                    @total = 0,
                                    @o_id  = 0

                        select      top 1
```

```
                                @o_id        = no_o_id
                        from    new_order (serializable updlock)
                        where   no_w_id      = @w_id and
                                no_d_id      = @d_id
                        order   by no_o_id asc

                    if (@@rowcount <> 0)
                        begin

--  claim the order for this district

                                delete       new_order
                                where        no_w_id       = @w_id and
                                             no_d_id       = @d_id and
                                             no_o_id       = @o_id

--  set carrier_id on this order (and get customer id)

                                update       orders
                                set          o_carrier_id =
@o_carrier_id,
                                             @c_id
            = o_c_id
                                where        o_w_id
            = @w_id and
                                             o_d_id
            = @d_id and
                                             o_id
            = @o_id

--  set date in all lineitems for this order (and sum amounts)

                                update       order_line
                                set          ol_delivery_d= getdate(),
                                             @total
            = @total + ol_amount
                                where        ol_w_id
            = @w_id and
                                             ol_d_id
            = @d_id and
                                             ol_o_id
            = @o_id

--  accummulate lineitem amounts for this order into customer

                                update       customer
                                set          c_balance    = c_balance +
@total,
                                             c_delivery_cnt
            = c_delivery_cnt + 1
                                where        c_w_id
            = @w_id and
                                             c_d_id
            = @d_id and
                                             c_id
            = @c_id

                        end

            select @oid1 = case @d_id when  1  then @o_id else @oid1 end,
              @oid2 = case @d_id when  2  then @o_id else @oid2 end,
              @oid3 = case @d_id when  3  then @o_id else @oid3 end,
              @oid4 = case @d_id when  4  then @o_id else @oid4 end,
              @oid5 = case @d_id when  5  then @o_id else @oid5 end,
              @oid6 = case @d_id when  6  then @o_id else @oid6 end,
              @oid7 = case @d_id when  7  then @o_id else @oid7 end,
              @oid8 = case @d_id when  8  then @o_id else @oid8 end,
              @oid9 = case @d_id when  9  then @o_id else @oid9 end,
              @oid10 = case @d_id when 10 then @o_id else @oid10 end

    end

commit tran d

-- return delivery data to client

select @oid1,
       @oid2,
       @oid3,
       @oid4,
       @oid5,
       @oid6,
       @oid7,
       @oid8,
       @oid9,
       @oid10

go
```

neword.sql

```
--  File:     NEWORD.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.42
--            Copyright Microsoft, 2002
--  Purpose:  Creates new order transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists ( select name from sysobjects where name = 'tpcc_neworder' )
             drop procedure tpcc_neworder
go

create proc tpcc_neworder
                                                                @w_id
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          numeric(4,4),
        @d_tax          numeric(4,4),
        @c_last         char(16),
        @c_credit       char(2),
        @c_discount     numeric(4,4),
        @i_price        numeric(5,2),
        @i_name         char(24),
        @i_data         char(50),
        @o_entry_d      datetime,
        @remote_flag    int,
        @s_quantity     smallint,
        @s_data         char(50),
        @s_dist         char(24),
             @li_no          int,
             @o_id                    int,
             @commit_flag    tinyint,
        @li_id          int,
        @li_s_w_id      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 (tablock repeatableread)
                        where       i_id = @li_id

--  update stock values

                        update      stock
                        set         s_ytd                   = s_ytd +
@li_qty,
                                    @s_quantity  = s_quantity   =
s_quantity - @li_qty +

case when (s_quantity - @li_qty < 10) then 91 else 0 end,
                                    s_order_cnt  = s_order_cnt + 1,
                                    s_remote_cnt = s_remote_cnt + case when
(@li_s_w_id = @w_id) then 0 else 1 end,
                                    @s_data                 = s_data,
                                    @s_dist                 = case @d_id
                                      when 1
then s_dist_01
                                      when 2
then s_dist_02
                                      when 3
then s_dist_03
                                      when 4
then s_dist_04
                                      when 5
then s_dist_05
                                      when 6
then s_dist_06
                                      when 7
then s_dist_07
                                      when 8
then s_dist_08
                                      when 9
then s_dist_09
                                      when 10
then s_dist_10
                                      end
                        where       s_i_id                  = @li_id and
                                    s_w_id                  = @li_s_w_id

--  if there actually is a stock (and item) with these ids, go to work

                        if (@@rowcount > 0)
                        begin

--  insert order_line data (using data from item and stock)

                                    insert into order_line values(@o_id,

@d_id,

@w_id,

@li_no,

@li_id,

@li_s_w_id,

'dec 31, 1899',

@li_qty,

@i_price * @li_qty,

@s_dist)

--  send line-item data to client

                                    select      @i_name,
                                                @s_quantity,
                                                b_g = case when
( (patindex('%ORIGINAL%',@i_data) > 0) and

(patindex('%ORIGINAL%',@s_data) > 0) )

                                                     then 'B' else 'G'
end,
                                                @i_price,
                                                @i_price * @li_qty

                        end
                        else
                        begin

--  no item (or stock) found - triggers rollback condition

                                    select '',0,'',0,0
                                    select @commit_flag = 0

                        end
            end

--  get customer last name, discount, and credit rating

            select      @c_last     = c_last,
                        @c_discount = c_discount,
                        @c_credit   = c_credit,
                        @c_id_local = c_id
            from        customer (repeatableread)
            where       c_id                    = @c_id and
                        c_w_id                  = @w_id and
                        c_d_id                  = @d_id

--  insert fresh row into orders table

            insert into orders values (             @o_id,
                                                                @d_id,
                                                                @w_id,
                                                                @c_id_local,
                                                                @o_entry_d,
                                                                0,
                                                                @o_ol_cnt,
                                                                @o_all_local)

--  insert corresponding row into new-order table

            insert into new_order values (          @o_id,
                                                                @d_id,
                                                                @w_id)

--  select warehouse tax

            select      @w_tax      = w_tax
            from        warehouse (repeatableread)
            where       w_id        = @w_id

            if (@commit_flag = 1)

                        commit transaction n
            else

--  all that work for nuthin!!!

                        rollback transaction n

--  return order data to client

            select      @w_tax,
                        @d_tax,
                        @o_id,
                        @c_last,
                        @c_discount,
                        @c_credit,
                        @o_entry_d,
                        @commit_flag

end

go
```

ordstat.sql

```
--  File:     ORDSTAT.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.42
--            Copyright Microsoft, 2002
--  Purpose:  Creates order status transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists ( select name from sysobjects where name = 'tpcc_orderstatus' )
            drop procedure   tpcc_orderstatus
go

create proc tpcc_orderstatus            @w_id       int,
                                        @d_id       tinyint,

                                        @c_id       int,
                                        @c_last     char(16) = ''


as

declare @c_balance                      numeric(12,2),
        @c_first                        char(16),
        @c_middle                       char(2),
        @o_id                           int,
        @o_entry_d                      datetime,
        @o_carrier_id                   smallint,
        @cnt                            smallint

begin tran o

if (@c_id = 0)
            begin

--  get customer id and info using last name

                        select      @cnt        = (count(*)+1)/2
                        from        customer (repeatableread)
                        where       c_last      = @c_last and
                                    c_w_id      = @w_id and
                                    c_d_id      = @d_id

                        set         rowcount @cnt

                        select      @c_id                   = c_id,
                                    @c_balance   = c_balance,
                                       @c_first  = c_first,
                                       @c_last   = c_last,
                                       @c_middle = c_middle
                        from        customer (repeatableread)
                        where       c_last                  = @c_last and
                                    c_w_id                  = @w_id and
                                    c_d_id                  = @d_id
                        order       by c_w_id, c_d_id, c_last, c_first

                        set         rowcount 0
            end

            else

            begin

--  get customer info if by id

                        select      @c_balance   = c_balance,
                                    @c_first     = c_first,
                                    @c_middle    = c_middle,
                                    @c_last                 = c_last
                        from        customer (repeatableread)
                        where       c_id                    = @c_id and
                                    c_d_id                  = @d_id and
                                    c_w_id                  = @w_id


                        select      @cnt        = @@rowcount

            end

--  if no such customer
```

```
            if (@cnt = 0)
            begin
                        raiserror('Customer not found',18,1)
                        goto custnotfound
            end

--  get order info

            select      @o_id                       = o_id,
                        @o_entry_d    = o_entry_d,
                        @o_carrier_id= o_carrier_id
            from        orders (serializable)
            where       o_c_id                      = @c_id and
                        o_d_id                      = @d_id and
                        o_w_id                      = @w_id
            order       by o_id asc

--  select order lines for the current order

            select      ol_supply_w_id,
                        ol_i_id,
                        ol_quantity,
                        ol_amount,
                        ol_delivery_d
            from        order_line (repeatableread)
            where       ol_o_id = @o_id and
                        ol_d_id = @d_id and
                        ol_w_id = @w_id

custnotfound:

commit tran o

--  return data to client

select      @c_id,
            @c_last,
            @c_first,
            @c_middle,
            @o_entry_d,
            @o_carrier_id,
            @c_balance,
            @o_id

go
```

payment.sql

```
--  File:     PAYMENT.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.42
--            Copyright Microsoft, 2002
--  Purpose:  Creates payment transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists (select name from sysobjects where name = 'tpcc_payment' )
            drop procedure tpcc_payment
go

create proc tpcc_payment   @w_id           int,
                                                    @c_w_id         int,
                                                    @h_amount
numeric(6,2),
                                                    @d_id           tinyint,
                                                    @c_d_id         tinyint,
                                                    @c_id           int,
                                                    @c_last         char(16) =
''


as
declare  @w_street_1     char(20),
         @w_street_2     char(20),
         @w_city         char(20),
         @w_state        char(2),
         @w_zip          char(9),
         @w_name         char(10),
         @d_street_1     char(20),
         @d_street_2     char(20),
         @d_city         char(20),
         @d_state        char(2),
         @d_zip          char(9),
         @d_name         char(10),
         @c_first        char(16),
         @c_middle       char(2),
         @c_street_1     char(20),
         @c_street_2     char(20),
         @c_city         char(20),
         @c_state        char(2),
         @c_zip          char(9),
         @c_phone        char(16),
         @c_since        datetime,
         @c_credit       char(2),
         @c_credit_lim   numeric(12,2),
         @c_balance      numeric(12,2),
         @c_discount     numeric(4,4),
         @data           char(500),
         @c_data         char(500),
         @datetime       datetime,
         @w_ytd          numeric(12,2),
         @d_ytd          numeric(12,2),
         @cnt            smallint,
         @val            smallint,
         @screen_data       char(200),
              @d_id_local   tinyint,
              @w_id_local   int,
              @c_id_local   int

select @screen_data = ''

begin tran p

--  get payment date

              select       @datetime = getdate()

              if (@c_id = 0)
              begin

--  get customer id and info using last name

                            select       @cnt         = count(*)
                            from         customer (repeatableread)
                            where        c_last       = @c_last and
                                         c_w_id       = @c_w_id and
                                         c_d_id       = @c_d_id


                            select       @val = (@cnt + 1) / 2
                            set          rowcount @val

                            select       @c_id        = c_id
                            from         customer (repeatableread)
                            where        c_last       = @c_last and
                                         c_w_id       = @c_w_id and
                                         c_d_id       = @c_d_id
                            order        by c_last, c_first

                            set          rowcount 0
              end

--  get customer info and update balances

              update       customer
              set          @c_balance    = c_balance  = c_balance - @h_amount,
                           c_payment_cnt= c_payment_cnt + 1,
                           c_ytd_payment= c_ytd_payment + @h_amount,
                           @c_first      = c_first,
                           @c_middle     = c_middle,
                           @c_last                     = c_last,
                           @c_street_1   = c_street_1,
                           @c_street_2   = c_street_2,
                           @c_city                     = c_city,
                           @c_state      = c_state,
                           @c_zip                      = c_zip,
                           @c_phone      = c_phone,
                           @c_credit     = c_credit,
                           @c_credit_lim= c_credit_lim,
                           @c_discount   = c_discount,
                           @c_since      = c_since,
                           @data                       = c_data,
                           @c_id_local   = c_id
              where        c_id                        = @c_id and
                           c_w_id                      = @c_w_id and
                           c_d_id                      = @c_d_id

--  if customer has bad credit get some more info

              if (@c_credit = 'BC')
              begin

--            compute new info

                           select @c_data              = convert(char(5),@c_id) +
                                                         convert(char(4),@c_d_id)
+
                                                         convert(char(5),@c_w_id)
+
                                                         convert(char(4),@d_id) +
                                                         convert(char(5),@w_id) +

convert(char(19),@h_amount) +
                                                         substring(@data, 1, 458)

--  update customer info

                           update       customer
                           set          c_data       = @c_data

                           where        c_id         = @c_id and
                                        c_w_id       = @c_w_id and
                                        c_d_id       = @c_d_id

                           select       @screen_data = substring (@c_data,1,200)
              end

--  get district data and update year-to-date

              update       district
              set          d_ytd                       = d_ytd + @h_amount,
                           @d_street_1   = d_street_1,
                           @d_street_2   = d_street_2,
                           @d_city                     = d_city,
                           @d_state      = d_state,
                           @d_zip                      = d_zip,
                           @d_name                     = d_name,
                           @d_id_local   = d_id
              where        d_w_id                      = @w_id and
                           d_id                        = @d_id

--  get warehouse data 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 tran p

--  return data to client

select       @c_id,
             @c_last,
             @datetime,
             @w_street_1,
             @w_street_2,
             @w_city,
             @w_state,
```

```
            @w_zip,
            @d_street_1,
            @d_street_2,
            @d_city,
            @d_state,
            @d_zip,
            @c_first,
            @c_middle,
            @c_street_1,
            @c_street_2,
            @c_city,
            @c_state,
            @c_zip,
            @c_phone,
            @c_since,
            @c_credit,
            @c_credit_lim,
            @c_discount,
            @c_balance,
            @screen_data

go
```

stocklev.sql

```
--  File:     STOCKLEV.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.42
--            Copyright Microsoft, 2002
--  Purpose:  Creates stock level transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists (select name from sysobjects where name = 'tpcc_stocklevel' )
            drop procedure tpcc_stocklevel
go

create proc tpcc_stocklevel             @w_id        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

go
```

Loader Source Code

./buildia64.cmd

```
@if "%ECHOON%"=="" echo off

setlocal

REM
REM Setup environment variables
REM

if /I "%DRIVE%" == "" set DRIVE=d:
if /I "%ROOT%" == "" set ROOT=%DRIVE%
if /I "%SPHINX%" == "" set SPHINX=%ROOT%\shiloh
if /I "%SQLTOOLS%" == "" set SQLTOOLS=%ROOT%\sqltools
if /I "%MSVC%" == "" set MSVC=%SQLTOOLS%\msdev\vc98
if /I "%SHAREDIDE%" == "" set SHAREDIDE=%SQLTOOLS%\msdev\common\msdev98
if /I "%COMMON%" == "" set COMMON=%SPHINX%\common
if /I "%MSSDK%" == "" set MSSDK=%DRIVE%\mssdk

REM Sanity checks
if not exist %SPHINX% echo %SPHINX% cannot be found&goto usage
if not exist %MSSDK%\bin\win64\cl.exe echo 64-bit compiler cannot be found
in %MSSDK%\bin\win64&goto usage
if not exist %SQLTOOLS% echo SQLTOOLS not found in %SQLTOOLS%&goto usage
if not exist %MSVC% echo Visual C not found in %MSVC%&goto usage
if not exist %SHAREDIDE% echo Visual Studio Common files not found
in %SHAREDIDE%&goto usage

set BUILDCFGDEBUG="tpccldr - Win64 Debug"
set BUILDCFGRELEASE="tpccldr - Win64 Release"

REM Set some defaults
set BUILDCFG=%BUILDCFGRELEASE%
set MFLAGS=

:nextparm
if "%1" =="" goto noparm
if "%1" == "-?" goto usage
if "%1" == "/?" goto usage
if "%1" == "debug" set BUILDCFG=%BUILDCFGDEBUG% & goto shift
if "%1" == "DEBUG" set BUILDCFG=%BUILDCFGDEBUG% & goto shift
if "%1" == "normal" set BUILDCFG=%BUILDCFGRELEASE% & goto shift
if "%1" == "NORMAL" set BUILDCFG=%BUILDCFGRELEASE% & goto shift
if "%1" == "-a" set MFLAGS=%1
if "%1" == "clean" set MFLAGS=%1
if "%1" == "CLEAN" set MFLAGS=%1

:shift
shift
goto nextparm

:noparm

pushd %MSSDK%
call SetWin64.bat
popd

REM Override Important Stuff...
set Include=%COMMON%\include;%include%
set Lib=%COMMON%\%CPU%\lib\retail;%lib%

call nmake -f tpccldr.mak CFG=%BUILDCFG% %MFLAGS%

goto leave

:usage
echo.
echo Usage: %0 [type] [flags]
echo.
echo          'type' is one of:
echo                        debug
echo                        normal
echo
echo          'flags' is zero or more of:
echo                        -a          build all
echo                        clean       cleans up crufty bits
echo                        -?          display this message
echo.

:leave
endlocal
```

./tpccldr.mak

```
# Microsoft Developer Studio Generated NMAKE File, Based on tpccldr.dsp
!IF "$(CFG)" == ""
CFG=tpccldr - Win64 Debug
CFG=tpccldr - Win64 Release
!MESSAGE No configuration specified. Defaulting to tpccldr - Win64 Release.
!ENDIF

!IF "$(CFG)" != "tpccldr - Win64 Release" && "$(CFG)" != "tpccldr - Win64 Debug"
!MESSAGE Invalid configuration "$(CFG)" specified.
!MESSAGE You can specify a configuration when running NMAKE
!MESSAGE by defining the macro CFG on the command line. For example:
!MESSAGE
!MESSAGE NMAKE /f "tpccldr.mak" CFG="tpccldr - Win64 Release"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "tpccldr - Win64 Release" (based on "Win64 (IA64) Console Application")
!MESSAGE "tpccldr - Win64 Debug" (based on "Win64 (IA64) Console Application")
!MESSAGE
!ERROR An invalid configuration is specified.
!ENDIF

!IF "$(OS)" == "Windows_NT"
NULL=
!ELSE
NULL=nul
!ENDIF

!IF  "$(CFG)" == "tpccldr - Win64 Release"

OUTDIR=.\bin
INTDIR=.\objects
# Begin Custom Macros
OutDir=.\bin
# End Custom Macros

ALL : "$(OUTDIR)\tpccldr.exe"


CLEAN :
            -@erase "$(INTDIR)\getargs.obj"
            -@erase "$(INTDIR)\random.obj"
            -@erase "$(INTDIR)\strings.obj"
            -@erase "$(INTDIR)\time.obj"
            -@erase "$(INTDIR)\tpccldr.obj"
            -@erase "$(OUTDIR)\tpccldr.exe"

"$(OUTDIR)" :
    if not exist "$(OUTDIR)/$(NULL)" mkdir "$(OUTDIR)"

"$(INTDIR)" :
    if not exist "$(INTDIR)/$(NULL)" mkdir "$(INTDIR)"

CPP=cl.exe
CPP_PROJ=/nologo /MD /Zep8 /Wp64 /W3 /O2 /D "NDEBUG" /D "WIN32" /D "_WIN32"
/D_IA64_=1 /DWIN64 /D_WIN64 /D "_CONSOLE" /D "DBNTWIN32" /Fo"$(INTDIR)\\"
/Fd"$(INTDIR)\\" /c

.c{$(INTDIR)}.obj::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

.cpp{$(INTDIR)}.obj::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

.cxx{$(INTDIR)}.obj::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

.c{$(INTDIR)}.sbr::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

.cpp{$(INTDIR)}.sbr::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

.cxx{$(INTDIR)}.sbr::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

RSC=rc.exe
BSC32=bscmake.exe
BSC32_FLAGS=/nologo /o"$(OUTDIR)\tpccldr.bsc"
BSC32_SBRS= \

LINK32=link.exe
LINK32_FLAGS=kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
odbcbcp.lib /nologo /subsystem:console /machine:IA64
/out:"$(OUTDIR)\tpccldr.exe"
LINK32_OBJS= \
             "$(INTDIR)\getargs.obj" \
             "$(INTDIR)\random.obj" \
             "$(INTDIR)\strings.obj" \
             "$(INTDIR)\time.obj" \
             "$(INTDIR)\tpccldr.obj"

"$(OUTDIR)\tpccldr.exe" : "$(OUTDIR)" $(DEF_FILE) $(LINK32_OBJS)
    $(LINK32) @<<
  $(LINK32_FLAGS) $(LINK32_OBJS)
<<

!ELSEIF  "$(CFG)" == "tpccldr - Win64 Debug"

OUTDIR=.\bin
INTDIR=.\objects
# Begin Custom Macros
OutDir=.\bin
# End Custom Macros

ALL : "$(OUTDIR)\tpccldr.exe" "$(OUTDIR)\tpccldr.bsc"


CLEAN :
            -@erase "$(INTDIR)\getargs.obj"
            -@erase "$(INTDIR)\getargs.sbr"
            -@erase "$(INTDIR)\random.obj"
            -@erase "$(INTDIR)\random.sbr"
            -@erase "$(INTDIR)\strings.obj"
            -@erase "$(INTDIR)\strings.sbr"
            -@erase "$(INTDIR)\time.obj"
            -@erase "$(INTDIR)\time.sbr"
            -@erase "$(INTDIR)\tpccldr.obj"
            -@erase "$(INTDIR)\tpccldr.sbr"
            -@erase "$(INTDIR)\vc70.pdb"
            -@erase "$(OUTDIR)\tpccldr.bsc"
            -@erase "$(OUTDIR)\tpccldr.exe"

"$(OUTDIR)" :
    if not exist "$(OUTDIR)/$(NULL)" mkdir "$(OUTDIR)"

"$(INTDIR)" :
    if not exist "$(INTDIR)/$(NULL)" mkdir "$(INTDIR)"

CPP=cl.exe
```

```
CPP_PROJ=/nologo /MD /Zep8 /Wp64 /W3 /GX /Zi /Od /D "_DEBUG" /D "WIN32" /D
"_WIN32" /D_IA64_=1 /DWIN64 /D_WIN64 /D "_CONSOLE" /D "DBNTWIN32"
/FR"$(INTDIR)\\" /Fo"$(INTDIR)\\" /Fd"$(INTDIR)\\" /c

.c{$(INTDIR)}.obj::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

.cpp{$(INTDIR)}.obj::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

.cxx{$(INTDIR)}.obj::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

.c{$(INTDIR)}.sbr::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

.cpp{$(INTDIR)}.sbr::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

.cxx{$(INTDIR)}.sbr::
   $(CPP) @<<
   $(CPP_PROJ) $<
<<

RSC=rc.exe
BSC32=bscmake.exe
BSC32_FLAGS=/nologo /o"$(OUTDIR)\tpccldr.bsc"
BSC32_SBRS= \
             "$(INTDIR)\getargs.sbr" \
             "$(INTDIR)\random.sbr" \
             "$(INTDIR)\strings.sbr" \
             "$(INTDIR)\time.sbr" \
             "$(INTDIR)\tpccldr.sbr"

"$(OUTDIR)\tpccldr.bsc" : "$(OUTDIR)" $(BSC32_SBRS)
    $(BSC32) @<<
  $(BSC32_FLAGS) $(BSC32_SBRS)
<<

LINK32=link.exe
LINK32_FLAGS=kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
odbcbcp.lib /nologo /subsystem:console /debug /machine:IA64
/out:"$(OUTDIR)\tpccldr.exe"
LINK32_OBJS= \
             "$(INTDIR)\getargs.obj" \
             "$(INTDIR)\random.obj" \
             "$(INTDIR)\strings.obj" \
             "$(INTDIR)\time.obj" \
             "$(INTDIR)\tpccldr.obj"

"$(OUTDIR)\tpccldr.exe" : "$(OUTDIR)" $(DEF_FILE) $(LINK32_OBJS)
    $(LINK32) @<<
  $(LINK32_FLAGS) $(LINK32_OBJS)
<<


!ENDIF

!IF "$(CFG)" == "tpccldr - Win64 Release" || "$(CFG)" == "tpccldr - Win64 Debug"
SOURCE=.\src\getargs.c

!IF  "$(CFG)" == "tpccldr - Win64 Release"


"$(INTDIR)\getargs.obj" : $(SOURCE) "$(INTDIR)"
             $(CPP) $(CPP_PROJ) $(SOURCE)


!ELSEIF  "$(CFG)" == "tpccldr - Win64 Debug"


"$(INTDIR)\getargs.obj"    "$(INTDIR)\getargs.sbr" : $(SOURCE) "$(INTDIR)"
             $(CPP) $(CPP_PROJ) $(SOURCE)


!ENDIF

SOURCE=.\src\random.c

!IF  "$(CFG)" == "tpccldr - Win64 Release"


"$(INTDIR)\random.obj" : $(SOURCE) "$(INTDIR)"
             $(CPP) $(CPP_PROJ) $(SOURCE)


!ELSEIF  "$(CFG)" == "tpccldr - Win64 Debug"


"$(INTDIR)\random.obj"     "$(INTDIR)\random.sbr" : $(SOURCE) "$(INTDIR)"
             $(CPP) $(CPP_PROJ) $(SOURCE)


!ENDIF

SOURCE=.\src\strings.c

!IF  "$(CFG)" == "tpccldr - Win64 Release"


"$(INTDIR)\strings.obj" : $(SOURCE) "$(INTDIR)"
             $(CPP) $(CPP_PROJ) $(SOURCE)


!ELSEIF  "$(CFG)" == "tpccldr - Win64 Debug"


"$(INTDIR)\strings.obj"    "$(INTDIR)\strings.sbr" : $(SOURCE) "$(INTDIR)"
             $(CPP) $(CPP_PROJ) $(SOURCE)


!ENDIF

SOURCE=.\src\time.c

!IF  "$(CFG)" == "tpccldr - Win64 Release"


"$(INTDIR)\time.obj" : $(SOURCE) "$(INTDIR)"
             $(CPP) $(CPP_PROJ) $(SOURCE)


!ELSEIF  "$(CFG)" == "tpccldr - Win64 Debug"


"$(INTDIR)\time.obj"       "$(INTDIR)\time.sbr" : $(SOURCE) "$(INTDIR)"
             $(CPP) $(CPP_PROJ) $(SOURCE)


!ENDIF

SOURCE=.\src\tpccldr.c

!IF  "$(CFG)" == "tpccldr - Win64 Release"


"$(INTDIR)\tpccldr.obj" : $(SOURCE) "$(INTDIR)"
             $(CPP) $(CPP_PROJ) $(SOURCE)


!ELSEIF  "$(CFG)" == "tpccldr - Win64 Debug"


"$(INTDIR)\tpccldr.obj"    "$(INTDIR)\tpccldr.sbr" : $(SOURCE) "$(INTDIR)"
             $(CPP) $(CPP_PROJ) $(SOURCE)


!ENDIF


!ENDIF
```

./src/getargs.c

```
//           File:                       GETARGS.C
//                                                   Microsoft TPC-C Kit Ver.
4.20
//                                                   Copyright Microsoft, 1996,
1997, 1998, 1999
//           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->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 'h':     /* Fall throught */
                        case 'H':
                                                GetArgsLoaderUsage();
                                                break;

                        case 'D':
                                                pargs->database = ptr+2;
                                                break;

                        case 'P':
                                                pargs->password = ptr+2;
                                                break;

                        case 'S':
                                                pargs->server = ptr+2;
                                                break;

                        case 'U':
                                                pargs->user = ptr+2;
                                                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 'p':
                                                pargs->pack_size =
atol(ptr+2);
                                                break;

                                        case 'i':
                                                pargs->build_index =
atol(ptr+2);
                                                break;

                                        case 'o':
                                                pargs->index_order =
atol(ptr+2);
                                                break;

                                        case 'c':
                                                pargs->scale_down =
atol(ptr+2);
                                                break;

                        case 'd':
                                                pargs->index_script_path =
ptr+2;
                                                break;

                        default:
```

```
                                GetArgsLoaderUsage();
                                exit(-1);
                                break;
                        }
    }

    /* check for required args */
    if (pargs->num_warehouses == UNDEF )
    {
                        printf("Number of Warehouses is required\n");
                        exit(-2);
    }

    return;
}


//==============================================================
//
// Function name: GetArgsLoaderUsage
//
//==============================================================

void GetArgsLoaderUsage()
{

#ifdef DEBUG
    printf("[%ld]DBG: Entering GetArgsLoaderUsage()\n", (int)
GetCurrentThreadId());
#endif


    printf("TPCCLDR:\n\n");
            printf("Parameter
Default\n");
            printf("-------------------------------------------------------
----\n");
    printf("-W Number of Warehouses to Load                         Required \n");
    printf("-S Server                                               %s\n",
SERVER);
    printf("-U Username                                             %s\n", USER);
    printf("-P Password                                             %s\n",
PASSWORD);
    printf("-D Database                                             %s\n",
DATABASE);
            printf("-b Batch
Size                            %ld\n", (long) BATCH);
            printf("-p TDS packet
size                           %ld\n", (long) DEFLDPACKSIZE);
            printf("-f Loader Results Output
Filename                  %s\n", LOADER_RES_FILE);
            printf("-s Starting
Warehouse                          %ld\n", (long)
DEF_STARTING_WAREHOUSE);
            printf("-i Build Option (data = 0, data and index =
1)        %ld\n", (long) BUILD_INDEX);
            printf("-o Cluster Index 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);
}
```

./src/random.c

```
//            File:                       RANDOM.C
//                                                      Microsoft TPC-C Kit Ver.
4.20
//                                                      Copyright Microsoft, 1996,
1997, 1998, 1999
//            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;
}
```

./src/strings.c

```
//            File:                       STRINGS.C
//                                                      Microsoft TPC-C Kit Ver.
4.20
//                                                      Copyright Microsoft, 1996,
1997, 1998, 1999
//            Purpose:      Source file for database loader string functions


// Includes
#include "tpcc.h"
#include <string.h>
#include <ctype.h>

//==============================================================
//
// Function name: MakeAddress
//
//==============================================================

void MakeAddress(char *street_1,
                                                                    char *street_2,
                                                                    char *city,
                                                                    char *state,
                                                                    char *zip)
{

#ifdef DEBUG
    printf("[%ld]DBG: Entering MakeAddress()\n", (int) GetCurrentThreadId());
#endif
```

```
    MakeAlphaString (10, 20, ADDRESS_LEN, street_1);
    MakeAlphaString (10, 20, ADDRESS_LEN, street_2);
    MakeAlphaString (10, 20, ADDRESS_LEN, city);
    MakeAlphaString ( 2,  2, STATE_LEN, state);
    MakeZipNumberString( 9,  9, ZIP_LEN, zip);

#ifdef DEBUG
    printf("[%ld]DBG: MakeAddress: street_1: %s, street_2: %s, city: %s,
state: %s, zip: %s\n",
                                        (int) GetCurrentThreadId(), street_1,
street_2, city, state, zip);
#endif

    return;

}


//===================================================================
//
// Function name: LastName
//
//===================================================================

void LastName(int  num,
                                char *name)
{
    static char *n[] =
    {
                            "BAR" , "OUGHT", "ABLE" , "PRI"  , "PRES",
                            "ESE" , "ANTI" , "CALLY", "ATION", "EING"
    };

#ifdef DEBUG
    printf("[%ld]DBG: Entering LastName()\n", (int) GetCurrentThreadId());
#endif

    if ((num >= 0) && (num < 1000))
    {
                            strcpy(name, n[(num/100)%10]);
                            strcat(name, n[(num/10)%10]);
                            strcat(name, n[(num/1)%10]);

                            if (strlen(name) < LAST_NAME_LEN)
                            {
                                    PaddString(LAST_NAME_LEN, name);
                            }

    }
    else
    {
                            printf("\nError in LastName()... num <%ld> out of
range (0,999)\n", num);
                            exit(-1);
    }


#ifdef DEBUG
    printf("[%ld]DBG: LastName: num = [%d] ==> [%d][%d][%d]\n",
                                    (int) GetCurrentThreadId(), num, num/100,
(num/10)%10, num%10);
            printf("[%ld]DBG: LastName: String = %s\n", (int)
GetCurrentThreadId(), name);
#endif

    return;

}


//===================================================================
//
// Function name: MakeAlphaString
//
//===================================================================

//philipdu 08/13/96 Changed MakeAlphaString to use A-Z, a-z, and 0-9 in
//accordance with spec see below:
//The spec says:
//4.3.2.2     The notation random a-string [x .. y]
//(respectively, n-string [x .. y]) represents a string of random alphanumeric
//(respectively, numeric) characters of a random length of minimum x, maximum y,
//and mean (y+x)/2. Alphanumerics are A..Z, a..z, and 0..9.  The only other
//requirement is that the character set used "must be able to represent a
minimum
//of 128 different characters".  We are using 8-bit chars, so this is a non
issue.
//It is completely unreasonable to stuff non-printing chars into the text fields.
//-CLevine 08/13/96

int MakeAlphaString( int  x, int  y, int  z, char *str)
{
            int                     len;
            int                     i;
    char    cc = 'a';
            static      char chArray[] =
"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz";
            static      int          chArrayMax = 61;

#ifdef DEBUG
    printf("[%ld]DBG: Entering MakeAlphaString()\n", (int)
GetCurrentThreadId());
#endif

            len= RandomNumber(x, y);

            for (i=0; i<len; i++)
            {
                    cc = chArray[RandomNumber(0, chArrayMax)];
        str[i] = cc;
    }

            if ( len < z )
                    memset(str+len, ' ', z - len);
            str[len] = 0;

    return len;
}


//===================================================================
//
// Function name: MakeOriginalAlphaString
//
//===================================================================

int MakeOriginalAlphaString(int  x,

int  y,

            int  z,

char *str,

            int  percent)
{
    int                 len;
    int                 val;
    int                 start;

#ifdef DEBUG
    printf("[%ld]DBG: Entering MakeOriginalAlphaString()\n", (int)
GetCurrentThreadId());
#endif

    // verify prercentage is valid
    if ((percent < 0) || (percent > 100))
    {
                            printf("MakeOrigianlAlphaString: Invalid
percentage: %d\n", percent);
                            exit(-1);
    }

    // verify string is at least 8 chars in length
    if ((x + y) <= 8)
    {
                            printf("MakeOriginalAlphaString: string length must
be >= 8\n");
                            exit(-1);
    }

    // Make Alpha String
    len = MakeAlphaString(x,y, z, str);

    val = RandomNumber(1,100);
    if (val <= percent)
    {
                            start = RandomNumber(0, len - 8);
                            strncpy(str + start, "ORIGINAL", 8);
    }


#ifdef DEBUG
    printf("[%ld]DBG: MakeOriginalAlphaString: : %s\n",
                                    (int) GetCurrentThreadId(), str);
#endif

    return (int)strlen(str);
}


//===================================================================
//
// Function name: MakeNumberString
//
//===================================================================
int MakeNumberString(int  x, int  y, int  z, char *str)
{
             char tmp[16];

            //MakeNumberString is always called MakeZipNumberString(16, 16, 16,
string)

             memset(str, '0', 16);
             _itoa(RandomNumber(0, 99999999), tmp, 10);
             memcpy(str, tmp, strlen(tmp));

             _itoa(RandomNumber(0, 99999999), tmp, 10);
             memcpy(str+8, tmp, strlen(tmp));

             str[16] = 0;

    return 16;
}


//===================================================================
//
// Function name: MakeZipNumberString
//
//===================================================================
int MakeZipNumberString(int  x, int  y, int  z, char *str)
{
             char tmp[16];

            //MakeZipNumberString is always called MakeZipNumberString(9, 9, 9,
string)

             strcpy(str, "000011111");

             _itoa(RandomNumber(0, 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)
{
             size_t       len;

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

             return;
}
```

./src/time.c

```
//            File:                         TIME.C
//                                                      Microsoft TPC-C Kit Ver.
4.20
//                                                      Copyright Microsoft, 1996,
1997, 1998, 1999
//            Purpose:      Source file for time functions


// Includes
#include "tpcc.h"

// Globals
static time_t start_sec;


//===================================================================
//
// Function name: TimeNow
//
//===================================================================

time_t TimeNow()
{
   time_t     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;
}
```

./src/tpcc.h

```
//            File:                         TPCC.H
//                                                        Microsoft TPC-C Kit Ver.
4.20
//                                                        Copyright Microsoft, 1996,
1997, 1998, 1999
//            Purpose:      Header file for TPC-C database loader


// Build number of TPC Benchmark Kit
#define TPCKIT_VER          "4.20"

// General headers
#include <windows.h>
#include <winbase.h>
#include <stdlib.h>
#include <stdio.h>
#include <process.h>
#include <stddef.h>
#include <stdarg.h>
#include <string.h>
#include <time.h>
#include <sys\timeb.h>
#include <sys\types.h>

// ODBC headers
#include <sql.h>
#include <sqlext.h>
#include <odbcss.h>

// General constants
#define MILLI                                 1000
#define FALSE                                                   0
#define TRUE                                                    1
#define UNDEF                                                                   -1
#define MINPRINTASCII                                             32
#define MAXPRINTASCII                                            126

// Default environment constants
#define SERVER                                                  ""
#define DATABASE                                                "tpcc"
#define USER                                                    "sa"
#define PASSWORD                                  ""

// Default loader arguments
#define BATCH                                 10000
#define DEFLDPACKSIZE                                           32768
#define LOADER_RES_FILE                         "logs\\load.out"
#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
            *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
time_t      TimeNow();

// Functions in strings.c
void        MakeAddress();
void        LastName();
int         MakeAlphaString();
int         MakeOriginalAlphaString();
int         MakeNumberString();
int         MakeZipNumberString();
void        InitString();
void        InitAddress();
void        PaddString();
```

./src/tpccldr.c

```
//            File:                         TPCCLDR.C
//                                                        Microsoft TPC-C Kit Ver.
4.20
//                                                        Copyright Microsoft, 1996,
1997, 1998, 1999
//            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

// Functions declarations

void HandleErrorDBC (SQLHDBC  hdbc1);

void CheckSQL();
void CheckDataBase();

long NURand();
void LoadItem();
void LoadWarehouse();

void Stock();
void District();

void LoadCustomer();
void CustomerBufInit();
void CustomerBufLoad();
void LoadCustomerTable();
void LoadHistoryTable();

void LoadOrders();
void OrdersBufInit();
void OrdersBufLoad();
void LoadOrdersTable();
void LoadNewOrderTable();
void LoadOrderLineTable();
void GetPermutation();
void CheckForCommit();
void OpenConnections();
void BuildIndex();
void FormatDate ();

// Shared memory structures

typedef struct
{
    long                ol;
    long                ol_i_id;
    short               ol_supply_w_id;
    short               ol_quantity;
    double              ol_amount;
    char                ol_dist_info[DIST_INFO_LEN+1];
            char
            ol_delivery_d[OL_DELIVERY_D_LEN+1];
} ORDER_LINE_STRUCT;

typedef struct
{
    long                o_id;
    short               o_d_id;
    short               o_w_id;
    long                o_c_id;
    short               o_carrier_id;
    short               o_ol_cnt;
    short               o_all_local;
            ORDER_LINE_STRUCT   o_ol[15];
} ORDERS_STRUCT;

typedef struct
{
    long                                                c_id;
    short                                               c_d_id;
    short                                               c_w_id;
            char
            c_first[FIRST_NAME_LEN+1];
    char
            c_middle[MIDDLE_NAME_LEN+1];
    char                                                c_last[LAST_NAME_LEN+1];
    char                                                c_street_1[ADDRESS_LEN+1];
    char                                                c_street_2[ADDRESS_LEN+1];
    char                                                c_city[ADDRESS_LEN+1];
    char                                                c_state[STATE_LEN+1];
    char                                                c_zip[ZIP_LEN+1];
    char                                                c_phone[PHONE_LEN+1];
    char                                                c_credit[CREDIT_LEN+1];
    double                                              c_credit_lim;
    double                                              c_discount;
//  fix to avoid ODBC float to numeric conversion problem.
//  double                                              c_balance;
            char                                                        c_balance[6];

    double                                              c_ytd_payment;
            short
            c_payment_cnt;
            short
            c_delivery_cnt;
            char
            c_data[C_DATA_LEN+1];
            double                                                      h_amount;
    char                                                h_data[H_DATA_LEN+1];
} CUSTOMER_STRUCT;

typedef struct
{
            char
            c_last[LAST_NAME_LEN+1];
            char
            c_first[FIRST_NAME_LEN+1];
    long                                                c_id;
} CUSTOMER_SORT_STRUCT;

typedef struct
{
    size_t              time_start;
} LOADER_TIME_STRUCT;


// Global variables

char        szLastError[300];

HENV        henv;

HDBC        v_hdbc;
            // for SQL Server version verification
HDBC        i_hdbc1;
            // for ITEM table
HDBC        w_hdbc1;
            // for WAREHOUSE, DISTRICT, STOCK
HDBC        c_hdbc1;
            // for CUSTOMER
HDBC        c_hdbc2;
            // for HISTORY
HDBC        o_hdbc1;
            // for ORDERS
HDBC        o_hdbc2;
            // for NEW-ORDER
HDBC        o_hdbc3;
            // for ORDER-LINE

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

ORDERS_STRUCT   orders_buf[ORDERS_PER_DISTRICT];
CUSTOMER_STRUCT customer_buf[CUSTOMERS_PER_DISTRICT];
long            orders_rows_loaded;
long            new_order_rows_loaded;
long            order_line_rows_loaded;
long            history_rows_loaded;
long            customer_rows_loaded;
long            stock_rows_loaded;
```

```
long            district_rows_loaded;
long            item_rows_loaded;
long            warehouse_rows_loaded;
time_t          main_time_start;
time_t          main_time_end;
long                                    max_items;
long                                    customers_per_district;
long                                    orders_per_district;
long                                    first_new_order;
long                                    last_new_order;


TPCCLDR_ARGS    *aptr, args;


//==============================================================
//
// Function name: main
//
//==============================================================

int main(int  argc, char **argv)
{

            DWORD           dwThreadID[MAX_MAIN_THREADS];
            HANDLE          hThread[MAX_MAIN_THREADS];
            FILE            *fLoader;
            char            buffer[255];
            int                                                 i;

            for (i=0; i<MAX_MAIN_THREADS; i++)
                        hThread[i] = NULL;

    printf("\n*****************************************************");
            printf("\n*                                                   *");
            printf("\n*  Microsoft SQL Server                             *");
            printf("\n*                                                   *");
            printf("\n*  TPC-C BENCHMARK KIT:  Database loader            *");
            printf("\n*  Version %s                                     *",
TPCKIT_VER);
            printf("\n*                                                   *");
            printf("\n*****************************************************\n\n"
);

    // process command line arguments

    aptr = &args;
    GetArgsLoader(argc, argv, aptr);

            // verify correct SQL Server version in use
            // you must be using SQL Server 7.00.623 or better to load

            CheckSQL();

            // verify database and tables exist before attempting to load

            CheckDataBase();

            printf("Build interface is ODBC.\n");

            if (aptr->build_index == 0)
                        printf("Data load only - no index creation.\n");
            else
                        printf("Data load and index creation.\n");

            if (aptr->index_order == 0)
                        printf("Clustered indexes will be created after bulk
load.\n");
            else
                        printf("Clustered indexes will be created before bulk
load.\n");

            // set database scale values
            if (aptr->scale_down == 1)
            {
                        printf("*** Scaled Down Database ***\n");
                        max_items = MAXITEMS_SCALE_DOWN;
                        customers_per_district = CUSTOMERS_SCALE_DOWN;
                        orders_per_district = ORDERS_SCALE_DOWN;
                        first_new_order = 0;
                        last_new_order  = 30;
            }
            else
            {
                        max_items = MAXITEMS;
                        customers_per_district = CUSTOMERS_PER_DISTRICT;
                        orders_per_district = ORDERS_PER_DISTRICT;
                        first_new_order = 2100;
                        last_new_order  = 3000;
            }


            // open connections to SQL Server

            OpenConnections();

            // open file for loader results
    fLoader = fopen(aptr->loader_res_file, "w");

    if (fLoader == NULL)
            {
                        printf("Error, loader result file open failed.");
                        exit(-1);
            }

    // start loading data

    sprintf(buffer,"TPC-C load started for %ld warehouses.\n",aptr-
>num_warehouses);

            printf("%s",buffer);
            fprintf(fLoader,"%s",buffer);

            main_time_start = (TimeNow() / MILLI);

            // start parallel load threads

            if (aptr->tables_all || aptr->table_item)
            {
                        fprintf(fLoader, "\nStarting loader threads for:
item\n");

                        hThread[0] = CreateThread(NULL,

                          0,

                          (LPTHREAD_START_ROUTINE) LoadItem,

                          NULL,

                          0,

                          &dwThreadID[0]);

                        if (hThread[0] == NULL)
                        {
                                    printf("Error, failed in creating
creating thread = 0.\n");
                                    exit(-1);
                        }
            }

            if (aptr->tables_all || aptr->table_warehouse)
            {
                        fprintf(fLoader, "Starting loader threads for:
warehouse\n");

                        hThread[1] = CreateThread(NULL,

                          0,

                          (LPTHREAD_START_ROUTINE) LoadWarehouse,

                          NULL,

                          0,

                          &dwThreadID[1]);

                        if (hThread[1] == NULL)
                        {
                                    printf("Error, failed in creating
creating thread = 1.\n");
                                    exit(-1);
                        }
            }

            if (aptr->tables_all || aptr->table_customer)
            {
                        fprintf(fLoader, "Starting loader threads for:
customer\n");

                        hThread[2] = CreateThread(NULL,

                          0,

                          (LPTHREAD_START_ROUTINE) LoadCustomer,

                          NULL,

                          0,

                          &dwThreadID[2]);

                        if (hThread[2] == NULL)
                        {
                                    printf("Error, failed in creating
creating main thread = 2.\n");
                                    exit(-1);
                        }
            }

            if (aptr->tables_all || aptr->table_orders)
            {
                        fprintf(fLoader, "Starting loader threads for:
orders\n");

                        hThread[3] = CreateThread(NULL,

                          0,

                          (LPTHREAD_START_ROUTINE) LoadOrders,

                          NULL,

                          0,

                          &dwThreadID[3]);

                        if (hThread[3] == NULL)
                        {
                                    printf("Error, failed in creating
creating main thread = 3.\n");
                                    exit(-1);
                        }
            }

            // Wait for threads to finish...
            for (i=0; i<MAX_MAIN_THREADS; i++)
            {
                        if (hThread[i] != NULL)
                        {
                                    WaitForSingleObject( hThread[i],
INFINITE );
                                    CloseHandle(hThread[i]);
                                    hThread[i] = NULL;
                        }
            }

            main_time_end = (TimeNow() / MILLI);

    sprintf(buffer,"\nTPC-C load completed successfully in %ld minutes.\n",
                                    (main_time_end - main_time_start)/60);

            printf("%s",buffer);
            fprintf(fLoader, "%s", buffer);

            fclose(fLoader);

            SQLFreeEnv(henv);

    exit(0);

            return 0;
}


//==============================================================
//
// Function name: LoadItem
//
//==============================================================

void LoadItem()
{
    long                    i_id;
            long                    i_im_id;
    char                    i_name[I_NAME_LEN+1];
    double                  i_price;
    char                    i_data[I_DATA_LEN+1];
            char                    name[20];
            time_t                  time_start;
            RETCODE                 rc;
            DBINT                   rcint;
            char                    bcphint[128];

            // Seed with unique number
            seed(1);

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

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

            InitString(i_name, I_NAME_LEN+1);
            InitString(i_data, I_DATA_LEN+1);

            sprintf(name, "%s..%s", aptr->database, "item");

            rc = bcp_init(i_hdbc1, name, NULL, "logs\\item.err", DB_IN);
            if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

            if ((aptr->build_index == 1) && (aptr->index_order == 1))
            {
                        sprintf(bcphint, "tablock, order (i_id),
ROWS_PER_BATCH = 100000");
                        rc = bcp_control(i_hdbc1, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(i_hdbc1);
            }

            rc = bcp_bind(i_hdbc1, (BYTE *) &i_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
            if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

            rc = bcp_bind(i_hdbc1, (BYTE *) &i_im_id, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT4, 2);
            if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

            rc = bcp_bind(i_hdbc1, (BYTE *) i_name, 0, I_NAME_LEN, NULL, 0, 0,
3);
            if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

            rc = bcp_bind(i_hdbc1, (BYTE *) &i_price, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 4);
            if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

            rc = bcp_bind(i_hdbc1, (BYTE *) i_data, 0, I_DATA_LEN, NULL, 0, 0,
5);
            if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

            time_start = (TimeNow() / MILLI);

            item_rows_loaded = 0;

            for (i_id = 1; i_id <= max_items; i_id++)
            {
                        i_im_id = RandomNumber(1L, 10000L);

                        MakeAlphaString(14, 24, I_NAME_LEN, i_name);

                        i_price = ((float) RandomNumber(100L, 10000L))/100.0;

                        MakeOriginalAlphaString(26, 50, I_DATA_LEN, i_data,
10);

                        rc = bcp_sendrow(i_hdbc1);
                        if (rc != SUCCEED)
```

```
                                HandleErrorDBC(i_hdbc1);

                        item_rows_loaded++;
                        CheckForCommit(i_hdbc1, i_hstmt1, item_rows_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()
{
    short     w_id;
    char      w_name[W_NAME_LEN+1];
    char      w_street_1[ADDRESS_LEN+1];
    char      w_street_2[ADDRESS_LEN+1];
    char      w_city[ADDRESS_LEN+1];
    char      w_state[STATE_LEN+1];
    char      w_zip[ZIP_LEN+1];
    double    w_tax;
    double    w_ytd;
                char            name[20];
                size_t          time_start;
                RETCODE         rc;
                DBINT           rcint;
                char            bcphint[128];


                // 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");

                rc = bcp_init(w_hdbc1, name, NULL, "logs\\whouse.err", DB_IN);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                if ((aptr->build_index == 1) && (aptr->index_order == 1))
                {
                        sprintf(bcphint, "tablock, order (w_id),
ROWS_PER_BATCH = %d", aptr->num_warehouses);
                        rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                HandleErrorDBC(w_hdbc1);
                }

               rc = bcp_bind(w_hdbc1, (BYTE *) &w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 1);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) w_name, 0, W_NAME_LEN, NULL, 0, 0,
2);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) w_street_1, 0, ADDRESS_LEN, NULL,
0, 0, 3);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) w_street_2, 0, ADDRESS_LEN, NULL,
0, 0, 4);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

               rc = bcp_bind(w_hdbc1, (BYTE *) w_city, 0, ADDRESS_LEN, NULL, 0, 0,
5);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) w_state, 0, STATE_LEN, NULL, 0, 0,
6);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) w_zip, 0, ZIP_LEN, NULL, 0, 0, 7);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) &w_tax, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 8);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) &w_ytd, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 9);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                time_start = (TimeNow() / MILLI);

                warehouse_rows_loaded = 0;

                for (w_id = (short)aptr->starting_warehouse; w_id <= aptr-
>num_warehouses; w_id++)
                {
                        MakeAlphaString(6,10, W_NAME_LEN, w_name);

                        MakeAddress(w_street_1, w_street_2, w_city, w_state,
w_zip);

                        w_tax = ((float) RandomNumber(0L,2000L))/10000.00;

                        w_ytd = 300000.00;

                        rc = bcp_sendrow(w_hdbc1);
                        if (rc != SUCCEED)
                                HandleErrorDBC(w_hdbc1);

                        warehouse_rows_loaded++;
                        CheckForCommit(w_hdbc1, i_hstmt1,
warehouse_rows_loaded, "warehouse", &time_start);
                }

                rcint = bcp_done(w_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()
{
    short     d_id;
    short     d_w_id;
    char      d_name[D_NAME_LEN+1];
    char      d_street_1[ADDRESS_LEN+1];
    char      d_street_2[ADDRESS_LEN+1];
    char      d_city[ADDRESS_LEN+1];
    char      d_state[STATE_LEN+1];
    char      d_zip[ZIP_LEN+1];
    double    d_tax;
    double    d_ytd;
                char            name[20];
    long      d_next_o_id;
                size_t          time_start;
                int                             w_id;
                RETCODE         rc;
                DBINT           rcint;
                char            bcphint[128];

                // Seed with unique number
                seed(4);

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

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

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

                rc = bcp_init(w_hdbc1, name, NULL, "logs\\district.err", DB_IN);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                if ((aptr->build_index == 1) && (aptr->index_order == 1))
                {
                        sprintf(bcphint, "tablock, order (d_w_id, d_id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 10));
                        rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                HandleErrorDBC(w_hdbc1);
                }

               rc = bcp_bind(w_hdbc1, (BYTE *) &d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 1);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) &d_w_id, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT2, 2);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) d_name, 0, D_NAME_LEN, NULL, 0, 0,
3);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) d_street_1, 0, ADDRESS_LEN, NULL,
0, 0, 4);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) d_street_2, 0, ADDRESS_LEN, NULL,
0, 0, 5);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

               rc = bcp_bind(w_hdbc1, (BYTE *) d_city, 0, ADDRESS_LEN, NULL, 0, 0,
6);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) d_state, 0, STATE_LEN, NULL, 0, 0,
7);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) d_zip, 0, ZIP_LEN, NULL, 0, 0, 8);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) &d_tax, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 9);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) &d_ytd, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 10);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                rc = bcp_bind(w_hdbc1, (BYTE *) &d_next_o_id, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT4, 11);
                if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

                d_ytd  = 30000.0;

                d_next_o_id = orders_per_district+1;

                time_start = (TimeNow() / MILLI);

                for (w_id = aptr->starting_warehouse; w_id <= aptr-
>num_warehouses; w_id++)
                {
                        d_w_id = w_id;

                        for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE;
d_id++)
                        {
                                MakeAlphaString(6,10,D_NAME_LEN,
d_name);

                                MakeAddress(d_street_1, d_street_2,
d_city, d_state, d_zip);

                                d_tax = ((float)
RandomNumber(0L,2000L))/10000.00;

                                rc = bcp_sendrow(w_hdbc1);
                                if (rc != SUCCEED)
                                        HandleErrorDBC(w_hdbc1);

                                district_rows_loaded++;
                                CheckForCommit(w_hdbc1, w_hstmt1,
district_rows_loaded, "district", &time_start);
                        }
    }

                rcint = bcp_done(w_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()
{
    long      s_i_id;
    short     s_w_id;
    short     s_quantity;
    char      s_dist_01[S_DIST_LEN+1];
    char      s_dist_02[S_DIST_LEN+1];
    char      s_dist_03[S_DIST_LEN+1];
    char      s_dist_04[S_DIST_LEN+1];
    char      s_dist_05[S_DIST_LEN+1];
    char      s_dist_06[S_DIST_LEN+1];
    char      s_dist_07[S_DIST_LEN+1];
```

```
    char      s_dist_08[S_DIST_LEN+1];
    char      s_dist_09[S_DIST_LEN+1];
    char      s_dist_10[S_DIST_LEN+1];
    long      s_ytd;
    short     s_order_cnt;
    short     s_remote_cnt;
    char      s_data[S_DATA_LEN+1];
    size_t    len;
              char          name[20];
              size_t        time_start;
              RETCODE       rc;
              DBINT         rcint;
              char          bcphint[128];

              // Seed with unique number
              seed(3);

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

              sprintf(name, "%s..%s", aptr->database, "stock");

              rc = bcp_init(w_hdbc1, name, NULL, "logs\\stock.err", DB_IN);
              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);
              }

              rc = bcp_bind(w_hdbc1, (BYTE *) &s_i_id, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT4, 1);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              bcp_bind(w_hdbc1, (BYTE *) &s_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) &s_quantity, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 3);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_01, 0, S_DIST_LEN, NULL, 0,
0, 4);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_02, 0, S_DIST_LEN, NULL, 0,
0, 5);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_03, 0, S_DIST_LEN, NULL, 0,
0, 6);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_04, 0, S_DIST_LEN, NULL, 0,
0, 7);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_05, 0, S_DIST_LEN, NULL, 0,
0, 8);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_06, 0, S_DIST_LEN, NULL, 0,
0, 9);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_07, 0, S_DIST_LEN, NULL, 0,
0, 10);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_08, 0, S_DIST_LEN, NULL, 0,
0, 11);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_09, 0, S_DIST_LEN, NULL, 0,
0, 12);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_10, 0, S_DIST_LEN, NULL, 0,
0, 13);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) &s_ytd, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT4, 14);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) &s_order_cnt, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 15);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) &s_remote_cnt, 0, SQL_VARLEN_DATA,
NULL, 0, SQLINT2, 16);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              rc = bcp_bind(w_hdbc1, (BYTE *) s_data, 0, S_DATA_LEN, NULL, 0, 0,
17);
              if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

              s_ytd = s_order_cnt = s_remote_cnt = 0;

              time_start = (TimeNow() / MILLI);

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

              for (s_i_id=1; s_i_id <= max_items; s_i_id++)
              {

                        for (s_w_id = (short)aptr->starting_warehouse; s_w_id
<= aptr->num_warehouses; s_w_id++)
                        {

                                  s_quantity =
(short)RandomNumber(10L,100L);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_01);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_02);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_03);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_04);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_05);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_06);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_07);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_08);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_09);
                                  len = MakeAlphaString(24,24,S_DIST_LEN,
s_dist_10);

                                  len = MakeOriginalAlphaString(26,50,
S_DATA_LEN, s_data,10);

                                  rc = bcp_sendrow(w_hdbc1);
                                  if (rc != SUCCEED)
                                            HandleErrorDBC(w_hdbc1);

                                  stock_rows_loaded++;
                                  CheckForCommit(w_hdbc1, w_hstmt1,
stock_rows_loaded, "stock", &time_start);

                        }
              }

              rcint = bcp_done(w_hdbc1);
              if (rcint < 0)
                        HandleErrorDBC(w_hdbc1);

              printf("Finished loading stock table.\n");

              SQLFreeStmt(w_hstmt1, SQL_DROP);
              SQLDisconnect(w_hdbc1);
              SQLFreeConnect(w_hdbc1);

              // if build index after load...
              if ((aptr->build_index == 1) && (aptr->index_order == 0))
                        BuildIndex("idxstkcl");

              return;
}


//==============================================================================
//
// Function   : LoadCustomer
//
//==============================================================================

void LoadCustomer()
{
              LOADER_TIME_STRUCT      customer_time_start;
              LOADER_TIME_STRUCT      history_time_start;
              short                             w_id;
    short     d_id;
              DWORD
              dwThreadID[MAX_CUSTOMER_THREADS];
              HANDLE
              hThread[MAX_CUSTOMER_THREADS];
              char                              name[20];
              RETCODE
              rc;
              DBINT
              rcint;
              char
              bcphint[128];
              char
              cmd[256];
              // SQLRETURN                                        rc_1;
              // SQLSMALLINT
              recnum, MsgLen;
              // SQLCHAR
              Sqlstate[6], Msg[SQL_MAX_MESSAGE_LENGTH];
              // SQLINTEGER                                       NativeError;

              // Seed with unique number
              seed(5);

              printf("Loading customer and history tables...\n");

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

              // Initialize bulk copy
              sprintf(name, "%s..%s", aptr->database, "customer");

              rc = bcp_init(c_hdbc1, name, NULL, "logs\\customer.err", DB_IN);
              if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

              if ((aptr->build_index == 1) && (aptr->index_order == 1))
              {
                        sprintf(bcphint, "tablock, order (c_w_id, c_d_id,
c_id), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 30000));
                        rc = bcp_control(c_hdbc1, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                  HandleErrorDBC(c_hdbc1);
              }

              sprintf(name, "%s..%s", aptr->database, "history");

              rc = bcp_init(c_hdbc2, name, NULL, "logs\\history.err", DB_IN);
              if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

              sprintf(bcphint, "tablock");
              rc = bcp_control(c_hdbc2, BCPHINTS, (void*) bcphint);
              if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

              customer_rows_loaded    = 0;
              history_rows_loaded     = 0;

              CustomerBufInit();

              customer_time_start.time_start = (TimeNow() / MILLI);
              history_time_start.time_start = (TimeNow() / MILLI);

              for (w_id = (short)aptr->starting_warehouse; w_id <= aptr-
>num_warehouses; w_id++)
              {
                        for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE;
d_id++)
                        {

                                  CustomerBufLoad(d_id, w_id);

                                  // Start parallel loading threads here...

                                  // Start customer table thread

                                  printf("...Loading customer table for:
d_id = %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");

                // build non-clustered index
                if (aptr->build_index == 1)
                        BuildIndex("idxcusnc");

               // Output the NURAND used for the loader into C_FIRST for C_ID = 1,
                // C_W_ID = 1, and C_D_ID = 1
                sprintf(cmd, "osql -S%s -U%s -P%s -d%s -e -Q\"update customer set
c_first = 'C_LOAD = %d' where c_id = 1 and c_w_id = 1 and c_d_id = 1\" >
logs\\nurand_load.log",
                                                        aptr->server,
                                                        aptr->user,
                                                        aptr->password,
                                                        aptr->database,
                                                        LOADER_NURAND_C);

                system(cmd);

                SQLFreeStmt(c_hstmt1, SQL_DROP);
                SQLDisconnect(c_hdbc1);
                SQLFreeConnect(c_hdbc1);

                SQLFreeStmt(c_hstmt2, SQL_DROP);
                SQLDisconnect(c_hdbc2);
                SQLFreeConnect(c_hdbc2);


        return;

}


//===============================================================
//
// Function   : CustomerBufInit
//
//===============================================================

void CustomerBufInit()
{
                int     i;

                for (i=0;i<customers_per_district;i++)
                {
                        customer_buf[i].c_id = 0;
                        customer_buf[i].c_d_id = 0;
                        customer_buf[i].c_w_id = 0;

                        strcpy(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;

                        //  fix to avoid ODBC float to numeric conversion
problem.                //           customer_buf[i].c_balance = 0;
                        strcpy(customer_buf[i].c_balance,"");

                        customer_buf[i].c_ytd_payment = 0;
                        customer_buf[i].c_payment_cnt = 0;
                        customer_buf[i].c_delivery_cnt = 0;

                        strcpy(customer_buf[i].c_data,"");

                        customer_buf[i].h_amount = 0;

                        strcpy(customer_buf[i].h_data,"");

                }



}


//===============================================================
//
```

```
// Function   : CustomerBufLoad
//
// Fills shared buffer for HISTORY and CUSTOMER
//===============================================================

void CustomerBufLoad(int d_id, int w_id)
{
                long                                                    i;
    CUSTOMER_SORT_STRUCT    c[CUSTOMERS_PER_DISTRICT];


                for (i=0;i<customers_per_district;i++)
                {
                        if (i < 1000)
                                LastName(i, c[i].c_last);
                        else

                LastName(NURand(255,0,999,LOADER_NURAND_C), c[i].c_last);

                        MakeAlphaString(8,16,FIRST_NAME_LEN, c[i].c_first);

                        c[i].c_id = i+1;

                }

                printf("...Loading customer buffer for: d_id = %d, w_id = %d\n",
                                                d_id, w_id);

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

                        customer_buf[i].c_d_id = d_id;
                        customer_buf[i].c_w_id = w_id;
                        customer_buf[i].h_amount = 10.0;

                        customer_buf[i].c_ytd_payment  = 10.0;

                        customer_buf[i].c_payment_cnt  = 1;
                        customer_buf[i].c_delivery_cnt = 0;

                        // Generate CUSTOMER and HISTORY data

                        customer_buf[i].c_id = c[i].c_id;

                        strcpy(customer_buf[i].c_first, c[i].c_first);
                        strcpy(customer_buf[i].c_last, c[i].c_last);

                        customer_buf[i].c_middle[0] = 'O';
                        customer_buf[i].c_middle[1] = 'E';

                        MakeAddress(customer_buf[i].c_street_1,

customer_buf[i].c_street_2,
                                                                customer_buf[i].c_city,

customer_buf[i].c_state,

customer_buf[i].c_zip);

                        MakeNumberString(16, 16, PHONE_LEN,
customer_buf[i].c_phone);

                        if (RandomNumber(1L, 100L) > 10)
                                customer_buf[i].c_credit[0] = 'G';
                        else
                                customer_buf[i].c_credit[0] = 'B';
                        customer_buf[i].c_credit[1] = 'C';

                        customer_buf[i].c_credit_lim = 50000.0;
                       customer_buf[i].c_discount = ((float) RandomNumber(0L,
5000L)) / 10000.0;

                        //  fix to avoid ODBC float to numeric conversion
problem.                //  customer_buf[i].c_balance = -10.0;
                        strcpy(customer_buf[i].c_balance,"-10.0");

                        MakeAlphaString(300, 500, C_DATA_LEN,
customer_buf[i].c_data);

                        // Generate HISTORY data
                        MakeAlphaString(12, 24, H_DATA_LEN,
customer_buf[i].h_data);

                }
}

//===============================================================
//
// Function   : LoadCustomerTable
//
//===============================================================

void LoadCustomerTable(LOADER_TIME_STRUCT *customer_time_start)
{
                int         i;
    long        c_id;
    short       c_d_id;
    short       c_w_id;
    char        c_first[FIRST_NAME_LEN+1];
    char        c_middle[MIDDLE_NAME_LEN+1];
    char        c_last[LAST_NAME_LEN+1];
    char        c_street_1[ADDRESS_LEN+1];
    char        c_street_2[ADDRESS_LEN+1];
    char        c_city[ADDRESS_LEN+1];
    char        c_state[STATE_LEN+1];
    char        c_zip[ZIP_LEN+1];
    char        c_phone[PHONE_LEN+1];
    char        c_credit[CREDIT_LEN+1];
    double      c_credit_lim;
    double      c_discount;
```

```
                //  fix to avoid ODBC float to numeric conversion problem.

                //  double                  c_balance;
                char                        c_balance[6];

    double      c_ytd_payment;
    short       c_payment_cnt;
    short       c_delivery_cnt;
    char        c_data[C_DATA_LEN+1];
                char                        c_since[C_SINCE_LEN+1];
                RETCODE                     rc;

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
1);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

                rc = bcp_bind(c_hdbc1, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT2, 3);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_first, 0, FIRST_NAME_LEN, NULL, 0, 0, 4);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_middle, 0, MIDDLE_NAME_LEN,NULL, 0, 0, 5);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_last, 0, LAST_NAME_LEN, NULL, 0, 0, 6);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_street_1, 0, ADDRESS_LEN, NULL, 0, 0, 7);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_street_2, 0, ADDRESS_LEN, NULL,0,0, 8);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_city, 0, ADDRESS_LEN, NULL, 0, 0, 9);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_state, 0, STATE_LEN, NULL, 0, 0, 10);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_zip, 0, ZIP_LEN, NULL, 0, 0, 11);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_phone, 0, PHONE_LEN, NULL, 0, 0, 12);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

                rc = bcp_bind(c_hdbc1, (BYTE *) &c_since, 0, C_SINCE_LEN, NULL, 0,
SQLCHARACTER, 13);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_credit, 0, CREDIT_LEN, NULL, 0, 0, 14);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_credit_lim, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 15);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_discount, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 16);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);


                //  fix to avoid ODBC float to numeric conversion problem.

    //  rc = bcp_bind(c_hdbc1, (BYTE *) &c_balance, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 17);
                //  if (rc != SUCCEED)
                //          HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_balance, 0, 5, NULL, 0, SQLCHARACTER, 17);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);


    rc = bcp_bind(c_hdbc1, (BYTE *) &c_ytd_payment, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 18);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_payment_cnt, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 19);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_delivery_cnt,0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 20);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_data, 0, 500, NULL, 0, 0, 21);
                if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc1);
```

```
    for (i = 0; i < customers_per_district; i++)
    {
                        c_id = customer_buf[i].c_id;
                        c_d_id = customer_buf[i].c_d_id;
                        c_w_id = customer_buf[i].c_w_id;

                        strcpy(c_first, customer_buf[i].c_first);
                        strcpy(c_middle, customer_buf[i].c_middle);
                        strcpy(c_last, customer_buf[i].c_last);
                        strcpy(c_street_1, customer_buf[i].c_street_1);
                        strcpy(c_street_2, customer_buf[i].c_street_2);
                        strcpy(c_city, customer_buf[i].c_city);
                        strcpy(c_state, customer_buf[i].c_state);
                        strcpy(c_zip, customer_buf[i].c_zip);
                        strcpy(c_phone, customer_buf[i].c_phone);
                        strcpy(c_credit, customer_buf[i].c_credit);

                        FormatDate(&c_since);


                        c_credit_lim = customer_buf[i].c_credit_lim;
                        c_discount = customer_buf[i].c_discount;

                        //  fix to avoid ODBC float to numeric conversion
problem.
                        //  c_balance = customer_buf[i].c_balance;
                        strcpy(c_balance, customer_buf[i].c_balance);

                        c_ytd_payment = customer_buf[i].c_ytd_payment;
                        c_payment_cnt = customer_buf[i].c_payment_cnt;
                        c_delivery_cnt = customer_buf[i].c_delivery_cnt;

                        strcpy(c_data, customer_buf[i].c_data);

                        // Send data to server
                        rc = bcp_sendrow(c_hdbc1);
                        if (rc != SUCCEED)
                                HandleErrorDBC(c_hdbc1);

                        customer_rows_loaded++;
                        CheckForCommit(c_hdbc1, c_hstmt1,
customer_rows_loaded, "customer", &customer_time_start->time_start);
    }
}


//====================================================================
//
// Function   : LoadHistoryTable
//
//====================================================================

void LoadHistoryTable(LOADER_TIME_STRUCT *history_time_start)
{
            int         i;
    long        c_id;
    short       c_d_id;
    short       c_w_id;
            double      h_amount;
    char        h_data[H_DATA_LEN+1];
            char                    h_date[H_DATE_LEN+1];
            RETCODE                 rc;

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
1);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 4);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 5);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

            rc = bcp_bind(c_hdbc2, (BYTE *) &h_date, 0, H_DATE_LEN, NULL, 0,
SQLCHARACTER, 6);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &h_amount, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 7);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) h_data, 0, H_DATA_LEN, NULL, 0, 0, 8);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

    for (i = 0; i < customers_per_district; i++)
    {
                        c_id = customer_buf[i].c_id;
                        c_d_id = customer_buf[i].c_d_id;
                        c_w_id = customer_buf[i].c_w_id;
                        h_amount = customer_buf[i].h_amount;
                        strcpy(h_data, customer_buf[i].h_data);

                        FormatDate(&h_date);

                        // send to server
                        rc = bcp_sendrow(c_hdbc2);
                        if (rc != SUCCEED)
                                HandleErrorDBC(c_hdbc2);

                        history_rows_loaded++;
                        CheckForCommit(c_hdbc2, c_hstmt2, history_rows_loaded,
"history", &history_time_start->time_start);
    }
}


//====================================================================-===============
//
// Function   : LoadOrders
//
//====================================================================

void LoadOrders()
{
            LOADER_TIME_STRUCT      orders_time_start;
            LOADER_TIME_STRUCT      new_order_time_start;
            LOADER_TIME_STRUCT      order_line_time_start;
            short                   w_id;
    short           d_id;
            DWORD
            dwThreadID[MAX_ORDER_THREADS];
            HANDLE
            hThread[MAX_ORDER_THREADS];
            char                                    name[20];
            RETCODE
            rc;
            char
            bcphint[128];

            // seed with unique number
            seed(6);

            printf("Loading orders...\n");

            // if build index before load...
            if ((aptr->build_index == 1) && (aptr->index_order == 1))
            {
                                    BuildIndex("idxordcl");
                                    BuildIndex("idxnodcl");
                                    BuildIndex("idxodlcl");
            }

            // initialize bulk copy
            sprintf(name, "%s..%s", aptr->database, "orders");

            rc = bcp_init(o_hdbc1, name, NULL, "logs\\orders.err", DB_IN);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

            if ((aptr->build_index == 1) && (aptr->index_order == 1))
            {
                        sprintf(bcphint, "tablock, order (o_w_id, o_d_id,
o_id), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 30000));
                        rc = bcp_control(o_hdbc1, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(o_hdbc1);
            }

            sprintf(name, "%s..%s", aptr->database, "new_order");

            rc = bcp_init(o_hdbc2, name, NULL, "logs\\neword.err", DB_IN);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

            if ((aptr->build_index == 1) && (aptr->index_order == 1))
            {
                        sprintf(bcphint, "tablock, order (no_w_id, no_d_id,
no_o_id), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 9000));
                        rc = bcp_control(o_hdbc2, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(o_hdbc2);
            }

            sprintf(name, "%s..%s", aptr->database, "order_line");

            rc = bcp_init(o_hdbc3, name, NULL, "logs\\ordline.err", DB_IN);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    if ((aptr->build_index == 1) && (aptr->index_order == 1))
            {
                        sprintf(bcphint, "tablock, order (ol_w_id, ol_d_id,
ol_o_id, ol_number), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 300000));
                        rc = bcp_control(o_hdbc3, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(o_hdbc3);
            }

            orders_rows_loaded      = 0;
            new_order_rows_loaded   = 0;
            order_line_rows_loaded  = 0;

            OrdersBufInit();

            orders_time_start.time_start = (TimeNow() / MILLI);
            new_order_time_start.time_start = (TimeNow() / MILLI);
            order_line_time_start.time_start = (TimeNow() / MILLI);

            for (w_id = (short)aptr->starting_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(int d_id, int w_id)
{

            int     cust[ORDERS_PER_DISTRICT+1];
            long    o_id;
            short   ol;

            printf("...Loading Order Buffer for: d_id = %d, w_id = %d\n",
                                    d_id, w_id);

            GetPermutation(cust, orders_per_district);

            for (o_id=0;o_id<orders_per_district;o_id++)
            {

                        // Generate ORDER and NEW-ORDER data

                        orders_buf[o_id].o_d_id = d_id;
                        orders_buf[o_id].o_w_id = w_id;
                        orders_buf[o_id].o_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_delivery_d,"1899-12-31
00:00:00.000");

                                    }
                        }
            }
}


//==============================================================
//
// Function   : LoadOrdersTable
//
//==============================================================

void LoadOrdersTable(LOADER_TIME_STRUCT *orders_time_start)
{
            int         i;
    long        o_id;
            short       o_d_id;
            short       o_w_id;
    long        o_c_id;
    short       o_carrier_id;
    short       o_ol_cnt;
    short       o_all_local;
            char                    o_entry_d[O_ENTRY_D_LEN+1];
            RETCODE                 rc;
            DBINT                   rcint;

            // bind ORDER data
    rc = bcp_bind(o_hdbc1, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
1);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_c_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 4);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

           rc = bcp_bind(o_hdbc1, (BYTE *) &o_entry_d, 0, O_ENTRY_D_LEN, NULL,
0, SQLCHARACTER, 5);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_carrier_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 6);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_ol_cnt, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 7);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_all_local, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 8);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

    for (i = 0; i < orders_per_district; i++)
    {
                        o_id         = orders_buf[i].o_id;
                        o_d_id       = orders_buf[i].o_d_id;
                        o_w_id       = orders_buf[i].o_w_id;
                        o_c_id       = orders_buf[i].o_c_id;
                        o_carrier_id = orders_buf[i].o_carrier_id;
                        o_ol_cnt     = orders_buf[i].o_ol_cnt;
                        o_all_local  = orders_buf[i].o_all_local;


                        FormatDate(&o_entry_d);

                        // send data to server
                        rc = bcp_sendrow(o_hdbc1);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(o_hdbc1);

                        orders_rows_loaded++;
                        CheckForCommit(o_hdbc1, o_hstmt1, orders_rows_loaded,
"orders", &orders_time_start->time_start);
    }

            // rcint = bcp_batch(o_hdbc1);
            // if (rcint < 0)
            //          HandleErrorDBC(o_hdbc1);

            if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
            {
                        rcint = bcp_done(o_hdbc1);
                        if (rcint < 0)
                                    HandleErrorDBC(o_hdbc1);

                        SQLFreeStmt(o_hstmt1, SQL_DROP);
                        SQLDisconnect(o_hdbc1);
                        SQLFreeConnect(o_hdbc1);

                        // if build index after load...
                        if ((aptr->build_index == 1) && (aptr->index_order ==
0))
                                    BuildIndex("idxordcl");

                        // build non-clustered index
                        if (aptr->build_index == 1)
                                    BuildIndex("idxordnc");
            }

}


//==============================================================
//
// Function   : LoadNewOrderTable
//
//==============================================================

void LoadNewOrderTable(LOADER_TIME_STRUCT *new_order_time_start)
{
    int         i;
    long        o_id;
    short       o_d_id;
    short       o_w_id;
            RETCODE                 rc;
            DBINT                   rcint;

            // Bind NEW-ORDER data

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
1);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

            for (i = first_new_order; i < last_new_order; i++)
            {
                        o_id    = orders_buf[i].o_id;
                        o_d_id  = orders_buf[i].o_d_id;
                        o_w_id  = orders_buf[i].o_w_id;

                        rc = bcp_sendrow(o_hdbc2);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(o_hdbc2);

                        new_order_rows_loaded++;

                        CheckForCommit(o_hdbc2, o_hstmt2,
new_order_rows_loaded, "new_order", &new_order_time_start->time_start);
            }

            // rcint = bcp_batch(o_hdbc2);
            // if (rcint < 0)
            //          HandleErrorDBC(o_hdbc2);

            if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
            {
                        rcint = bcp_done(o_hdbc2);
                        if (rcint < 0)
                                    HandleErrorDBC(o_hdbc2);

                        SQLFreeStmt(o_hstmt2, SQL_DROP);
                        SQLDisconnect(o_hdbc2);
                        SQLFreeConnect(o_hdbc2);

                        // if build index after load...
                        if ((aptr->build_index == 1) && (aptr->index_order ==
0))
                                    BuildIndex("idxnodcl");

            }
}


//==============================================================
//
// Function   : LoadOrderLineTable
//
//==============================================================

void LoadOrderLineTable(LOADER_TIME_STRUCT *order_line_time_start)
{
            int         i,j;
    long        o_id;
            short       o_d_id;
            short       o_w_id;
    long        ol;
            long        ol_i_id;
    short       ol_supply_w_id;
    short       ol_quantity;
    double      ol_amount;
    char        ol_dist_info[DIST_INFO_LEN+1];
            char                    ol_delivery_d[OL_DELIVERY_D_LEN+1];
```

```
            RETCODE                     rc;
            DBINT                       rcint;

            // bind ORDER-LINE data
    rc = bcp_bind(o_hdbc3, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
1);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
4);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_i_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 5);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_supply_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 6);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

            rc = bcp_bind(o_hdbc3, (BYTE *) &ol_delivery_d, 0,
OL_DELIVERY_D_LEN, NULL, 0, SQLCHARACTER, 7);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_quantity, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 8);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_amount, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 9);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) ol_dist_info, 0, DIST_INFO_LEN, NULL, 0, 0,
10);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

            for (i = 0; i < orders_per_district; i++)
    {
                        o_id    = orders_buf[i].o_id;
                        o_d_id  = orders_buf[i].o_d_id;
                        o_w_id  = orders_buf[i].o_w_id;

                        for (j=0; j < orders_buf[i].o_ol_cnt; j++)
                        {
                                    ol              =
orders_buf[i].o_ol[j].ol;
                                    ol_i_id         =
orders_buf[i].o_ol[j].ol_i_id;
                                    ol_supply_w_id =
orders_buf[i].o_ol[j].ol_supply_w_id;
                                    ol_quantity     =
orders_buf[i].o_ol[j].ol_quantity;
                                    ol_amount       =
orders_buf[i].o_ol[j].ol_amount;

            strcpy(ol_delivery_d,orders_buf[i].o_ol[j].ol_delivery_d);


            strcpy(ol_dist_info,orders_buf[i].o_ol[j].ol_dist_info);

                                    rc = bcp_sendrow(o_hdbc3);
                                    if (rc != SUCCEED)

                                                HandleErrorDBC(o_hdbc3);


                                    order_line_rows_loaded++;
                                    CheckForCommit(o_hdbc3, o_hstmt3,
order_line_rows_loaded, "order_line", &order_line_time_start->time_start);
                        }

            }

            // rcint = bcp_batch(o_hdbc3);
            // if (rcint < 0)
            //          HandleErrorDBC(o_hdbc3);

            if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
            {
                        rcint = bcp_done(o_hdbc3);
                        if (rcint < 0)
                                    HandleErrorDBC(o_hdbc3);

                        SQLFreeStmt(o_hstmt3, SQL_DROP);
                        SQLDisconnect(o_hdbc3);
                        SQLFreeConnect(o_hdbc3);

                        // if build index after load...
                        if ((aptr->build_index == 1) && (aptr->index_order ==
0))
                                    BuildIndex("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,
                                                      int rows_loaded,
                                                                  char
*table_name,
                                                      size_t *time_start)
{

    time_t    time_end, time_diff;
            // DBINT      rcint;

    if ( !(rows_loaded % aptr->batch) )
    {

                        // rcint = bcp_batch(hdbc);
                        // if (rcint < 0)
                        //          HandleErrorDBC(hdbc);

                        time_end = (TimeNow() / MILLI);
                        time_diff = time_end - *time_start;

                        printf("-> Loaded %ld rows into %s in %ld sec - Total
= %d (%.2f rps)\n",
                                    aptr->batch,
                                    table_name,
                                                      time_diff,
                                    rows_loaded,
                                                      (float) aptr->batch /
(time_diff ? time_diff : 1L));

                        *time_start = time_end;
    }

    return;
}


//================================================================
//
// Function   : OpenConnections
//
//================================================================

void OpenConnections()
{

            RETCODE         rc;

            char                                szDriverString[300];
            char                                szDriverStringOut[1024];
            SQLSMALLINT                 cbDriverStringOut;


            SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv );

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

            SQLAllocHandle(SQL_HANDLE_DBC, henv , &i_hdbc1);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &w_hdbc1);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &c_hdbc1);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &c_hdbc2);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &o_hdbc1);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &o_hdbc2);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &o_hdbc3);

            SQLSetConnectAttr(i_hdbc1, SQL_COPT_SS_BCP, (SQLPOINTER)
SQL_BCP_ON, SQL_IS_INTEGER);
              SQLSetConnectAttr(w_hdbc1, SQL_COPT_SS_BCP, (SQLPOINTER)
SQL_BCP_ON, SQL_IS_INTEGER);
              SQLSetConnectAttr(c_hdbc1, SQL_COPT_SS_BCP, (SQLPOINTER)
SQL_BCP_ON, SQL_IS_INTEGER);
              SQLSetConnectAttr(c_hdbc2, SQL_COPT_SS_BCP, (SQLPOINTER)
SQL_BCP_ON, SQL_IS_INTEGER);
              SQLSetConnectAttr(o_hdbc1, SQL_COPT_SS_BCP, (SQLPOINTER)
SQL_BCP_ON, SQL_IS_INTEGER);
              SQLSetConnectAttr(o_hdbc2, SQL_COPT_SS_BCP, (SQLPOINTER)
SQL_BCP_ON, SQL_IS_INTEGER);
              SQLSetConnectAttr(o_hdbc3, SQL_COPT_SS_BCP, (SQLPOINTER)
SQL_BCP_ON, SQL_IS_INTEGER);

            // Open connections to SQL Server

            // Connection 1

            sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

            rc =  SQLSetConnectOption (i_hdbc1, SQL_PACKET_SIZE, aptr-
>pack_size);
            if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

            rc = SQLDriverConnect ( i_hdbc1,                                                                    NULL,

            (SQLCHAR*)&szDriverString[0] ,

            SQL_NTS,

            (SQLCHAR*)&szDriverStringOut[0],

            sizeof(szDriverStringOut),

            &cbDriverStringOut,

            SQL_DRIVER_NOPROMPT );
            if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

            // 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)
                        HandleErrorDBC(w_hdbc1);

            // Connection 3

            sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

            rc = 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)
                        HandleErrorDBC(c_hdbc1);
```

```
            // Connection 4

            sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
aptr->server,
aptr->user,
aptr->password,
aptr->database );
            rc = SQLSetConnectOption (c_hdbc2, SQL_PACKET_SIZE, aptr-
>pack_size);
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

            rc = SQLDriverConnect ( c_hdbc2,
            NULL,
            (SQLCHAR*)&szDriverString[0] ,
            SQL_NTS,
            (SQLCHAR*)&szDriverStringOut[0],
            sizeof(szDriverStringOut),
            &cbDriverStringOut,
            SQL_DRIVER_NOPROMPT );
            if (rc != SUCCEED)
                        HandleErrorDBC(c_hdbc2);

            // Connection 5

            sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
aptr->server,
aptr->user,
aptr->password,
aptr->database );
            rc = SQLSetConnectOption (o_hdbc1, SQL_PACKET_SIZE, aptr-
>pack_size);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

            rc = SQLDriverConnect ( o_hdbc1,
            NULL,
            (SQLCHAR*)&szDriverString[0] ,
            SQL_NTS,
            (SQLCHAR*)&szDriverStringOut[0],
            sizeof(szDriverStringOut),
            &cbDriverStringOut,
            SQL_DRIVER_NOPROMPT );
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

            // Connection 6

            sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
aptr->server,
aptr->user,
aptr->password,
aptr->database );
            rc = SQLSetConnectOption (o_hdbc2, SQL_PACKET_SIZE, aptr-
>pack_size);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

            rc = SQLDriverConnect ( o_hdbc2,
            NULL,
            (SQLCHAR*)&szDriverString[0] ,
            SQL_NTS,
            (SQLCHAR*)&szDriverStringOut[0],
            sizeof(szDriverStringOut),
            &cbDriverStringOut,
            SQL_DRIVER_NOPROMPT );
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

            // Connection 7

            sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;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)
                        HandleErrorDBC(o_hdbc3);

}

//================================================================
//
// 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 > logs\\%s.log",
                                                aptr->server,
                                                aptr->user,
                                                aptr->password,
                                                aptr->index_script_path,
                                                index_script,
                                                index_script);

            system(cmd);

            printf("Finished index creation:  %s\n",index_script);
}


void HandleErrorDBC (SQLHDBC  hdbc1)
{
            SQLCHAR                     SqlState[6],
Msg[SQL_MAX_MESSAGE_LENGTH];
            SQLINTEGER  NativeError;
            SQLSMALLINT i, MsgLen;
            SQLRETURN   rc2;
            char                        timebuf[128];
            char                        datebuf[128];
            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" , datebuf, timebuf,
szLastError);

                        fp1 = fopen("logs\\tpccldr.err","w");
                        if (fp1 == NULL)
                                    printf("ERROR:  Unable to open errorlog
file.\n");
                        else
                        {
                                    fprintf(fp1, "[%s : %s] %s\n" , datebuf,
timebuf, szLastError);
                                    fclose(fp1);
                        }

                        i++;

            }
}

void HandleErrorSTMT (HSTMT  hstmt1)
{
            SQLCHAR                     SqlState[6],
Msg[SQL_MAX_MESSAGE_LENGTH];
            SQLINTEGER  NativeError;
            SQLSMALLINT i, MsgLen;
            SQLRETURN   rc2;
            char                        timebuf[128];
            char                        datebuf[128];
            FILE                        *fp1;

            i = 1;
            while (( rc2 = SQLGetDiagRec(SQL_HANDLE_STMT , hstmt1, i,
SqlState , &NativeError,
                                                Msg, sizeof(Msg) ,
&MsgLen )) != SQL_NO_DATA )
            {
                        sprintf( szLastError , "%s" ,  Msg );

                        _strtime(timebuf);
                        _strdate(datebuf);

                        printf( "[%s : %s] %s\n" , datebuf, timebuf,
szLastError);

                        fp1 = fopen("logs\\tpccldr.err","w");
                        if (fp1 == NULL)
                                    printf("ERROR:  Unable to open errorlog
file.\n");
                        else
                        {
                                    fprintf(fp1, "[%s : %s] %s\n" , datebuf,
timebuf, szLastError);
                                    fclose(fp1);
                        }

                        i++;

            }
}


void FormatDate ( char* szTimeCOutput )
{
            struct tm when;
            time_t now;

            time( &now );
            when  = *localtime( &now );

            mktime( &when );

            // odbc datetime format
            strftime( szTimeCOutput , 30 , "%Y-%m-%d %H:%M:%S.000", &when );

            return;

}


//================================================================
//
// Function   : CheckSQL
//
//================================================================

void CheckSQL()
{
            RETCODE         rc;

            char                                    szDriverString[300];
            char                                    szDriverStringOut[1024];
            BOOL                                    SQLBuildFlag;

            SQLSMALLINT                 cbDriverStringOut;
            SQLCHAR                                 SQLVersion[19];
            SQLLEN                                  SQLVersionInd;


            SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv );

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

            SQLAllocHandle(SQL_HANDLE_DBC, henv , &v_hdbc);

            SQLSetConnectAttr(v_hdbc, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );

            // Open connection to SQL Server

            sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s" ,
aptr->server,
aptr->user,
aptr->password );
            if ( SQLSetConnectAttr( v_hdbc, SQL_ATTR_PACKET_SIZE,
(SQLPOINTER)(LONG_PTR)aptr->pack_size, SQL_IS_UINTEGER ) != SQL_SUCCESS )
                        HandleErrorDBC(v_hdbc);

            rc = SQLDriverConnect ( v_hdbc,
                                                                                    NULL,
            (SQLCHAR*)&szDriverString[0] ,
            SQL_NTS,
            (SQLCHAR*)&szDriverStringOut[0],
            sizeof(szDriverStringOut),
            &cbDriverStringOut,
```

```
                SQL_DRIVER_NOPROMPT );

                if ((rc != SQL_SUCCESS) && (rc != SQL_SUCCESS_WITH_INFO))
                        HandleErrorDBC(v_hdbc);

                if ( SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt) !=
SQL_SUCCESS )
                        HandleErrorSTMT(v_hstmt);

                rc = SQLBindCol(v_hstmt, 4, SQL_C_CHAR, &SQLVersion,
sizeof(SQLVersion), &SQLVersionInd);

                // issue SQL Server extended stored procedure (xp_msver) to
determine installed version
                rc = SQLExecDirect(v_hstmt, "EXECUTE xp_msver ProductVersion",
SQL_NTS);

                if ((rc != SQL_SUCCESS) && (rc != SQL_SUCCESS_WITH_INFO))
                        HandleErrorSTMT(v_hstmt);

                rc = SQLFetch(v_hstmt);

                if (rc != SQL_SUCCESS)
                        HandleErrorDBC(v_hdbc);

                // Check build number to ensure 7.00.623 or higher

                SQLBuildFlag = FALSE;      // Assume bad SQL Build

#ifdef _WIN64 // BUG64BIT: v-juanr Skip version check for 64-bit runs for now
                {
                        SQLBuildFlag = TRUE;
                }
#else
                if ( SQLVersion[0] == 55 )
                {
                        if ( SQLVersion[2] == 48 )
                        {
                                if ( SQLVersion[5] == 56 )
                                {
                                        if ( (SQLVersion[6] >= 48)
&  (SQLVersion[7] >= 53) )
                                        {
                                                SQLBuildFlag
= TRUE;
                                        }
                                        else
                                        {
                                                SQLBuildFlag
= FALSE;
                                        }
                                }
                                else
                                {
                                        if ( SQLVersion[5] >= 54 )
                                        {
                                                if
( (SQLVersion[6] >= 50) & (SQLVersion[7] >= 51) )
                                                {

                SQLBuildFlag = TRUE;
                                                }
                                                else
                                                {

                SQLBuildFlag = FALSE;
                                                }
                                        }
                                        else
                                        {
                                                if
( SQLVersion[5] >= 55 )
                                                {

                if ( (SQLVersion[6] >= 48) & (SQLVersion[7] >= 48) )

                {

                SQLBuildFlag = TRUE;

                }

                else

                {

                SQLBuildFlag = FALSE;

                }
                                                }
                                        }

                                }
                        }
                        else

                        {

                        if ( SQLVersion[5] >= 49 )
                        {
                                if ( (SQLVersion[6] >= 52)
& (SQLVersion[7] >= 48) )
                                {
                                        SQLBuildFlag
= TRUE;
                                }
                                else
                                {
                                        SQLBuildFlag
= FALSE;
                                }
                        }
                                        else
                                        {
                                                SQLBuildFlag = FALSE;
                                        }
                                }
                        }
                }
                else
                {
                        SQLBuildFlag = FALSE;
                }
        }
#endif  // v-juanr

        if ( SQLBuildFlag == TRUE) // SQL Version checks out
        {
                printf("You are using SQL Server version = %9s\n\n",
SQLVersion);
        }
        else
        {
                // SQLBuildFlag == FALSE
                printf("ERROR.  The SQL Server version you are using
is not supported\n");
                printf("for TPC-C benchmarking.  You currently have
SQL Server version %9s\n",SQLVersion);
                printf("installed.  Please upgrade to Microsoft SQL
Server 7.00.623 or better.\n");
                printf("and re-run the SETUP program.\n\n");
                exit(1);
        }

        SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
        SQLDisconnect(v_hdbc);
        SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

        return;

}

//==================================================================
//
// Function   : CheckDataBase
//
//==================================================================

void CheckDataBase()
{

        RETCODE         rc;

        char                                    szDriverString[300];
        char                                    szDriverStringOut[1024];
        char                                    TablesBitMap[9] =
{"000000000"};
        int                                             i, ExitFlag;

        SQLSMALLINT             cbDriverStringOut;
        SQLCHAR                                 TabName[10];
        SQLINTEGER              TabCount;
        SQLLEN                                  TabNameInd, TabCountInd;


        ExitFlag = 0;

        SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv );

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

        SQLAllocHandle(SQL_HANDLE_DBC, henv , &v_hdbc);

        SQLSetConnectAttr(v_hdbc, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );

        // Open connection to SQL Server

        sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

        rc = SQLSetConnectAttr( v_hdbc, SQL_ATTR_PACKET_SIZE,
(SQLPOINTER)(LONG_PTR)aptr->pack_size, SQL_IS_UINTEGER );
        if (rc != SQL_SUCCESS)
                HandleErrorDBC(v_hdbc);

        rc = SQLDriverConnect ( v_hdbc,                                 NULL,

        (SQLCHAR*)&szDriverString[0] ,

        SQL_NTS,

        (SQLCHAR*)&szDriverStringOut[0],

        sizeof(szDriverStringOut),

        &cbDriverStringOut,

        SQL_DRIVER_NOPROMPT );

        // if the rc is SQL_ERROR, the the TPCC database probably does not
exist
        if (rc == SQL_ERROR)
        {
                printf("The database TPCC does not appear to
exist!\n");
                printf("\nCheck LOGS\\ directory for database
creation errors.\n");

                // cleanup database connections and handles
                SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
                SQLDisconnect(v_hdbc);
                SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

                // since there is not a database, exit back to
SETUP.CMD
                exit(1);
        }

        if ( SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt) !=
SQL_SUCCESS )
                HandleErrorDBC(v_hdbc);

        if ( SQLBindCol(v_hstmt, 1, SQL_C_ULONG, &TabCount, 0,
&TabCountInd) != SQL_SUCCESS )
                HandleErrorSTMT(v_hstmt);

        // count the number of user tables from sysobjects
        rc = SQLExecDirect(v_hstmt, "select count(*) from sysobjects where
xtype = \'U\'", SQL_NTS);
        if ((rc != SQL_SUCCESS) && (rc != SQL_SUCCESS_WITH_INFO))
                HandleErrorSTMT(v_hstmt);

        if ( SQLFetch(v_hstmt) != SQL_SUCCESS )
                HandleErrorSTMT(v_hstmt);

        // if the number of tables is less than 9, select all the user
tables in TPCC
        if (TabCount != 9)
        {
                SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);

                SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt);

                if ( SQLBindCol(v_hstmt, 1, SQL_C_CHAR, &TabName,
sizeof(TabName), &TabNameInd) != SQL_SUCCESS )
                        HandleErrorSTMT(v_hstmt);

                // select the list of user tables into a result set
                rc = SQLExecDirect(v_hstmt, "select * from sysobjects
where xtype = \'U\'", SQL_NTS);
                if ((rc != SQL_SUCCESS) && (rc !=
SQL_SUCCESS_WITH_INFO))
                        HandleErrorSTMT(v_hstmt);

                // go through the result set and set the bitmap for
each found table
                // set the bitmap to '1' if the table name is found

                while ((rc = SQLFetch(v_hstmt)) != SQL_NO_DATA)
                {
                        switch( TabName[0] )
                        {
                        case 'w':
                                        TablesBitMap[0] = '1';
                                        break;
                        case 'd':
                                        TablesBitMap[1] = '1';
                                        break;
                        case 'c':
                                        TablesBitMap[2] = '1';
                                        break;
                        case 'h':
                                        TablesBitMap[3] = '1';
                                        break;
                        case 'n':
                                        TablesBitMap[4] = '1';
                                        break;
                        case 'o':
                                        if (TabName[5] = 's')
                TablesBitMap[5] = '1';
                                        if (TabName[5] = '_')
                TablesBitMap[6] = '1';
                                        break;
                        case 'i':
                                        TablesBitMap[7] = '1';
                                        break;
                        case 's':
                                        TablesBitMap[8] = '1';
                                        break;
                        }
                }

                // a '0' ExitFlag means do NOT exit the loader early,
a '1' means exit the loader early
                ExitFlag = 0;

                // interate through the bitmap to display which
table(s) is actually missing
                for (i = 0; i <= 8; i++)
                {
                        switch(i)
                        {
                        case 0:
                                        if (TablesBitMap[i] ==
'0')
                                        {
                                                printf("The
Warehouse table is missing or damaged.\n");
                                                ExitFlag = 1;
                                        }
                                        break;
                        case 1:
                                        if (TablesBitMap[i] ==
'0')
                                        {
```

```
                                                printf("The
District table is missing or damaged.\n");
                                                ExitFlag = 1;
                                        }
                                        break;
                                case 2:
                                        if (TablesBitMap[i] ==
'0')
                                        {
                                                printf("The
Customer table is missing or damaged.\n");
                                                ExitFlag = 1;
                                        }
                                        break;
                                case 3:
                                        if (TablesBitMap[i] ==
'0')
                                        {
                                                printf("The
History table is missing or damaged.\n");
                                                ExitFlag = 1;
                                        }
                                        break;
                                case 4:
                                        if (TablesBitMap[i] ==
'0')
                                        {
                                                printf("The
New_Order table is missing or damaged.\n");
                                                ExitFlag = 1;
                                        }
                                        break;
                                case 5:
                                        if (TablesBitMap[i] ==
'0')
                                        {
                                                printf("The
Orders table is missing or damaged.\n");
                                                ExitFlag = 1;
                                        }
                                        break;
                                case 6:
                                        if (TablesBitMap[i] ==
'0')
                                        {
                                                printf("The
Order_Line table is missing or damaged.\n");
                                                ExitFlag = 1;
                                        }
                                        break;
                                case 7:
                                        if (TablesBitMap[i] ==
'0')
                                        {
                                                printf("The
Item table is missing or damaged.\n");
                                                ExitFlag = 1;
                                        }
                                        break;
                                case 8:
                                        if (TablesBitMap[i] ==
'0')
                                        {
                                                printf("The
Stock table is missing or damaged.\n");
                                                ExitFlag = 1;
                                        }
                                        break;
                                }
                        }

                        // if one or more tables are missing, display message
and exit the loader
                        if (ExitFlag = 1)
                        {
                                printf("\nExiting TPC-C Loader!\n");
                                printf("\nCheck LOGS\\ directory for
database\n");
                                printf("or table creation errors.\n");

                                // cleanup database connections and
handles
                                SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
                                SQLDisconnect(v_hdbc);
                                SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

                                exit(1);
                        }
                }

                // cleanup database connections and handles
                SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
                SQLDisconnect(v_hdbc);
                SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

                return;
}
```

Appendix C : Tunable Parameters

RTE input parameter

The following parameters were used with Microsoft BenchCraft RTE..

Profile: 25500wh32drv32cl
File Path: C:\Bench\25500wh32drv32cl.pro
Version: 3

Number of Engines: 32

Name: DRIVER01
Description:
Directory: c:\drv01
Machine: rte01
Parameter Set: TPCC
Index: 0
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER11809672718
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER02
Description:
Directory: c:\drv02
Machine: rte01
Parameter Set: TPCC
Index: 10000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER21809739671
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER03
Description:
Directory: c:\drv03
Machine: rte01
Parameter Set: TPCC
Index: 20000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER31809769828
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 2

Name: DRIVER04
Description:
Directory: c:\drv04
Machine: rte02
Parameter Set: TPCC
Index: 30000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER41809841125
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER05
Description:
Directory: c:\drv05
Machine: rte02
Parameter Set: TPCC
Index: 40000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER51809865937
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER06
Description:
Directory: c:\drv06
Machine: rte02
Parameter Set: TPCC
Index: 50000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER61809907062
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 2

Name: DRIVER07
Description:
Directory: c:\drv07
Machine: rte03
Parameter Set: TPCC
Index: 60000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER71809924359
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER08
Description:
Directory: c:\drv08
Machine: rte03
Parameter Set: TPCC
Index: 70000000
Seed: 1423
Configured Users: 7960
Pipe Name: DRIVER81809949078
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER09
Description:
Directory: c:\drv09
Machine: rte03
Parameter Set: TPCC
Index: 80000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER91809978500
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 2

Name: DRIVER10
Description:
Directory: c:\drv10
Machine: rte04
Parameter Set: TPCC
Index: 90000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER10-2131595296
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER11
Description:
Directory: c:\drv11
Machine: rte04
Parameter Set: TPCC
Index: 100000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER11-2131522875
Connect Rate: 2000

Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER12
Description:
Directory: c:\drv12
Machine: rte04
Parameter Set: TPCC
Index: 110000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER12-2131493640
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 2

Name: DRIVER13
Description:
Directory: c:\drv13
Machine: rte05
Parameter Set: TPCC
Index: 120000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER136238328
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER14
Description:
Directory: c:\drv14
Machine: rte05
Parameter Set: TPCC
Index: 130000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER146263218
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER15
Description:
Directory: c:\drv15
Machine: rte05
Parameter Set: TPCC
Index: 140000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER156321281
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 2

Name: DRIVER16
Description:
Directory: c:\drv16
Machine: rte06
Parameter Set: TPCC
Index: 150000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER166360343
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER17
Description:
Directory: c:\drv17
Machine: rte06
Parameter Set: TPCC
Index: 160000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER176382843
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER18
Description:
Directory: c:\drv18
Machine: rte07
Parameter Set: TPCC
Index: 170000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER186398578
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER19
Description:
Directory: c:\drv19
Machine: rte07
Parameter Set: TPCC
Index: 180000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER196464218
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER20
Description:
Directory: c:\drv20
Machine: rte08
Parameter Set: TPCC
Index: 190000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER206479296
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER21
Description:
Directory: c:\drv21
Machine: rte08
Parameter Set: TPCC
Index: 200000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER216496562
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER22
Description:
Directory: c:\drv22
Machine: rte09
Parameter Set: TPCC
Index: 210000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER226570937
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER23
Description:
Directory: c:\drv23
Machine: rte09

Parameter Set: TPCC
Index: 220000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER236594296
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER24
Description:
Directory: c:\drv24
Machine: rte10
Parameter Set: TPCC
Index: 230000000
Seed: 1423
Configured Users: 7960
Pipe Name: DRIVER246635125
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER25
Description:
Directory: c:\drv25
Machine: rte10
Parameter Set: TPCC
Index: 240000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER256696078
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER26
Description:
Directory: c:\drv26
Machine: rte10
Parameter Set: TPCC
Index: 250000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER266724968
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 2

Name: DRIVER27
Description:
Directory: c:\drv27
Machine: rte11
Parameter Set: TPCC
Index: 260000000
Seed: 1423
Configured Users: 7960
Pipe Name: DRIVER2716782546
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER28
Description:
Directory: c:\drv28
Machine: rte11
Parameter Set: TPCC
Index: 270000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER2816938953
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER29
Description:
Directory: c:\drv29
Machine: rte11
Parameter Set: TPCC
Index: 280000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER2917072968
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 2

Name: DRIVER30
Description:
Directory: c:\drv30
Machine: rte12
Parameter Set: TPCC
Index: 290000000
Seed: 1423
Configured Users: 7960
Pipe Name: DRIVER3017124968
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER31
Description:
Directory: c:\drv31
Machine: rte12
Parameter Set: TPCC
Index: 300000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER3117168734
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 1

Name: DRIVER32
Description:
Directory: c:\drv32
Machine: rte12
Parameter Set: TPCC
Index: 310000000
Seed: 1423
Configured Users: 7970
Pipe Name: DRIVER3217223234
Connect Rate: 2000
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 2

Number of User groups: 32

Driver Engine: DRIVER01
IIS Server: acl01
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1 - 797
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER02
IIS Server: acl02
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 798 - 1594
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER03
IIS Server: acl03
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1595 - 2391
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER04
IIS Server: acl04
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 2392 - 3188
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER05
IIS Server: acl05
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 3189 - 3985
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER06
IIS Server: acl06
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 3986 - 4782
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER07
IIS Server: acl07
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 4783 - 5579
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER08
IIS Server: acl08
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 5580 - 6375
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7960
District id: 1
Scale Down: No

Driver Engine: DRIVER09
IIS Server: acl09
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 6376 - 7172
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER10
IIS Server: acl10
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 7173 - 7969
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER11
IIS Server: acl11
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 7970 - 8766
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER12
IIS Server: acl12
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 8767 - 9563
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER13
IIS Server: acl13
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 9564 - 10360
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER14
IIS Server: acl14
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 10361 - 11157
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER15
IIS Server: acl15
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 11158 - 11954
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER16
IIS Server: acl16
SQL Server: asama
Database: tpcc

User: sa
Protocol: HTML
w_id Range: 11955 - 12751
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER17
IIS Server: acl17
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 12752 - 13548
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER18
IIS Server: acl18
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 13549 - 14345
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER19
IIS Server: acl19
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 14346 - 15142
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER20
IIS Server: acl20
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 15143 - 15939
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER21
IIS Server: acl21
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 15940 - 16736
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER22
IIS Server: acl22
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 16737 - 17533
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER23
IIS Server: acl23
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 17534 - 18330
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER24
IIS Server: acl24
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 18331 - 19126
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7960
District id: 1
Scale Down: No

Driver Engine: DRIVER25
IIS Server: acl25
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 19127 - 19923
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER26
IIS Server: acl26
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 19924 - 20720
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER27
IIS Server: acl27
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 20721 - 21516
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7960
District id: 1
Scale Down: No

Driver Engine: DRIVER28
IIS Server: acl28
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 21517 - 22313
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER29
IIS Server: acl29
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 22314 - 23110
w_id Min Warehouse: 1

w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER30
IIS Server: acl30
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 23111 - 23906
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7960
District id: 1
Scale Down: No

Driver Engine: DRIVER31
IIS Server: acl31
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 23907 - 24703
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Driver Engine: DRIVER32
IIS Server: acl32
SQL Server: asama
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 24704 - 25500
w_id Min Warehouse: 1
w_id Max Warehouse: 25500
Scale: Normal
User Count: 7970
District id: 1
Scale Down: No

Number of Parameter Sets: 2

~Default
Default Parameter Set

TPCC

Menu Fence	Menu Delay	Txn Weight	Think Time	Key Time	RT Time	RT Delay
		New Order	10.00	12.05		18.01
0.10	5.00		0.10			
		Payment	10.00	12.05		3.01
0.10	5.00		0.10			
		Delivery	1.00	5.05		2.01
0.10	5.00		0.10			
		Stock Level	1.00	5.05		2.01
0.10	20.00		0.10			
		Order Status	1.00	10.05		2.01
0.10	5.00		0.10			

TPCC

Menu Fence	Menu Delay	Txn Weight	Think Time	Key Time	RT Time	RT Delay
		New Order	44.88	12.07		18.01
0.10	5.00		0.10			
		Payment	43.02	12.07		3.01
0.10	5.00		0.10			
		Delivery	4.03	5.07		2.01
0.10	5.00		0.10			
		Stock Level	4.03	5.07		2.01
0.10	20.00		0.10			
		Order Status	4.04	10.07		2.01
0.10	5.00		0.10			

<Server Configuration>

Services

Following services were activated during the measurement.

Automatic Updates
COM+ Event System
Computer Browser
Cryptographic Services
DHCP Client
Distributed File System
Distributed Link Tracking Client
Distributed Transaction Coordinator
DNS Client
Error Reporting Service
Event Log
Help and Support
IPSEC Services
Logical Disk Manager
Microsoft Search
Network Connections
Network Location Awareness (NLA)
NT LM Security Support Provider
Plug and Play
Print Spooler
Protected Storage
Remote Access Connection Manager
Remote Procedure Call (RPC)
Remote Registry
Secondary Logon
Security Accounts Manager
Server
Shell Hardware Detection
System Event Notification
Task Scheduler
TCP/IP NetBIOS Helper
Telephony
Terminal Services
Windows Management Instrumentation
Windows Time
Wireless Configuration
Workstation

Network Adapter Tunings

Network adapter (Intel PRO/1000F Server Adapter) settings were changed as follows;

Number of Coalesce Buffers = 768
Number of Receive Buffers = 256

Registry Tunings

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\I/O System]
"CountOperations"=dword:00000000

Boot Loader Configuration

Two switches were added to the OsLoadOptions;

/CONFIGFLAG=8224 : Interrupt logging disable
/MAXPROCSPERCLUSTER=0 : Concentrate interrupts onto the highest CPU.

User Rights Assignment

The Group Policy Editor was used to modify an entry under "Computer Configuration" -> "Windows Settings" -> "Security Settings" -> "Local Policies" -> "User Rights Assignment".
The right of "Lock pages in memory" was assigned to the Administrator so that SQL Server could use large amounts of physical memory.

System Information

System Information report written at: 09/05/02 11:30:14
System Name: ASAMA
[System Summary]

Item Value
OS Name Microsoft(R) Windows(R) .NET Datacenter Server
Version 5.2.3668 Build 3668
OS Manufacturer Microsoft Corporation
System Name ASAMA
System Manufacturer NEC
System Model server u32000
System Type Itanium (TM) -based System
Processor ia64 Family 31 Model 0 Stepping 6 GenuineIntel ~1000 Mhz
Processor ia64 Family 31 Model 0 Stepping 6 GenuineIntel ~1000 Mhz
Processor ia64 Family 31 Model 0 Stepping 6 GenuineIntel ~1000 Mhz
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Processor ia64 Family 31 Model 0 Stepping 6 GenuineIntel ~1000 Mhz
Processor ia64 Family 31 Model 0 Stepping 6 GenuineIntel ~1000 Mhz
BIOS Version/Date Phoenix Technologies LTD 6.0.D101, 7/25/2002
SMBIOS Version 2.3
Windows Directory C:\WINDOWS
System Directory C:\WINDOWS\system32
Boot Device \Device\HarddiskVolume4
Locale United States
Hardware Abstraction Layer Version = "5.2.3668.0

(main.020806-1624)"
User Name ASAMA\Administrator
Time Zone Tokyo Standard Time
Total Physical Memory 32,762.13 MB
Available Physical Memory 252.57 GB
Total Virtual Memory 511.10 GB
Available Virtual Memory 507.14 GB
Page File Space 255.10 GB
Page File C:\pagefile.sys

[Hardware Resources]

[Conflicts/Sharing]

Resource Device
I/O Port 0x00000000-0x000003AF PCI bus
I/O Port 0x00000000-0x000003AF Direct memory access controller

I/O Port 0x00001B00-0x00001BFF PCI bus
I/O Port 0x00001B00-0x00001BFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

I/O Port 0x000003C0-0x000003DF PCI bus
I/O Port 0x000003C0-0x000003DF Standard VGA Graphics Adapter

I/O Port 0x00001700-0x000017FF PCI bus
I/O Port 0x00001700-0x000017FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

I/O Port 0x00001300-0x000014FF PCI bus
I/O Port 0x00001300-0x000014FF Adaptec SCSI Card 39160 - Ultra160 SCSI

I/O Port 0x00001A00-0x00001AFF PCI bus
I/O Port 0x00001A00-0x00001AFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

I/O Port 0x00001600-0x000016FF PCI bus
I/O Port 0x00001600-0x000016FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

I/O Port 0x00001D00-0x00001DFF PCI bus
I/O Port 0x00001D00-0x00001DFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

I/O Port 0x00001900-0x000019FF PCI bus
I/O Port 0x00001900-0x000019FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

I/O Port 0x00001500-0x000015FF PCI bus
I/O Port 0x00001500-0x000015FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

I/O Port 0x00001C00-0x00001CFF PCI bus
I/O Port 0x00001C00-0x00001CFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

I/O Port 0x00001800-0x000018FF PCI bus
I/O Port 0x00001800-0x000018FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

Memory Address 0xA0000-0xBFFFF PCI bus
Memory Address 0xA0000-0xBFFFF Standard VGA Graphics Adapter

I/O Port 0x00001200-0x000012FF PCI bus
I/O Port 0x00001200-0x000012FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

I/O Port 0x000003B0-0x000003BB PCI bus
I/O Port 0x000003B0-0x000003BB Standard VGA Graphics Adapter

I/O Port 0x00001E00-0x0000FFFF PCI bus
I/O Port 0x00001E00-0x0000FFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)

I/O Port 0x00000D00-0x000011FF PCI bus
I/O Port 0x00000D00-0x000011FF Extended IO Bus

[DMA]

Resource Device Status
Channel 4 Direct memory access controller OK

[Forced Hardware]

Device PNP Device ID

[I/O]

Resource Device Status
0x00000000-0x000003AF PCI bus OK
0x00000000-0x000003AF Direct memory access controller OK
0x000003B0-0x000003BB PCI bus OK
0x000003B0-0x000003BB Standard VGA Graphics Adapter OK
0x000003BC-0x000003BF PCI bus OK
0x000003C0-0x000003DF PCI bus OK
0x000003C0-0x000003DF Standard VGA Graphics Adapter OK
0x000003E0-0x00000CF7 PCI bus OK
0x00000D00-0x000011FF PCI bus OK
0x00000D00-0x000011FF Extended IO Bus OK
0x00000080-0x0000008F Direct memory access controller OK
0x000000C0-0x000000DF Direct memory access controller OK
0x00000020-0x00000021 Programmable interrupt controller OK
0x000000A0-0x000000A1 Programmable interrupt controller OK
0x00000040-0x00000043 System timer OK
0x00000061-0x00000061 System speaker OK
0x00000070-0x00000071 System CMOS/real time clock OK
0x000000F0-0x000000FF Numeric data processor OK
0x000000B2-0x000000B3 Generic Bus OK
0x00000E00-0x00000E3F Generic Bus OK
0x00000092-0x00000092 Motherboard resources OK
0x000004D0-0x000004D1 Motherboard resources OK
0x00000D80-0x00000D80 Motherboard resources OK
0x00000D81-0x00000D81 Motherboard resources OK
0x00000CA0-0x00000CA1 Motherboard resources OK
0x00000CA4-0x00000CA7 Motherboard resources OK
0x0000002E-0x0000002F Motherboard resources 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
0x00000C00-0x00000C03 Extended IO Bus OK
0x00000F00-0x00000F7F Extended IO Bus OK
0x00000F80-0x00000FFF Extended IO Bus OK
0x00000CA2-0x00000CA2 OK
0x00000CA3-0x00000CA3 OK
0x00001120-0x0000112F Intel(r) IA64 Bus Master IDE Controller OK
0x000001F0-0x000001F7 Primary IDE Channel OK
0x000003F6-0x000003F6 Primary IDE Channel OK
0x00001100-0x0000111F Intel(r) 82372FB PCI to USB Universal Host Controller OK
0x00001000-0x000010FF Standard VGA Graphics Adapter OK
0x000002F8-0x000002FF Communications Port (COM2) OK
0x00001200-0x000012FF PCI bus OK
0x00001200-0x000012FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0x00001300-0x000014FF PCI bus OK
0x00001300-0x000014FF Adaptec SCSI Card 39160 - Ultra160 SCSI OK
0x00001400-0x000014FF Adaptec SCSI Card 39160 - Ultra160 SCSI OK
0x00001500-0x000015FF PCI bus OK
0x00001500-0x000015FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0x00001600-0x000016FF PCI bus OK
0x00001600-0x000016FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0x00001700-0x000017FF PCI bus OK
0x00001700-0x000017FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0x00001800-0x000018FF PCI bus OK
0x00001800-0x000018FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0x00001900-0x000019FF PCI bus OK
0x00001900-0x000019FF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0x00001A00-0x00001AFF PCI bus OK
0x00001A00-0x00001AFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK

0x00001B00-0x00001BFF PCI bus OK
0x00001B00-0x00001BFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0x00001C00-0x00001CFF PCI bus OK
0x00001C00-0x00001CFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0x00001D00-0x00001DFF PCI bus OK
0x00001D00-0x00001DFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0x00001E00-0x0000FFFF PCI bus OK
0x00001E00-0x0000FFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK

[IRQs]

Resource Device Status
IRQ 9 Microsoft ACPI-Compliant System OK
IRQ 0 System timer OK
IRQ 8 System CMOS/real time clock OK
IRQ 13 Numeric data processor 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 11 OK
IRQ 14 Primary IDE Channel OK
IRQ 19 Intel(r) 82372FB PCI to USB Universal Host Controller OK
IRQ 245 Communications Port (COM2) OK
IRQ 20 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
IRQ 68 Adaptec SCSI Card 39160 - Ultra160 SCSI OK
IRQ 67 Adaptec SCSI Card 39160 - Ultra160 SCSI OK
IRQ 73 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
IRQ 78 Intel(R) PRO/1000 F Server Adapter #3 OK
IRQ 84 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
IRQ 86 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
IRQ 90 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
IRQ 156 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
IRQ 161 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
IRQ 166 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
IRQ 178 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
IRQ 183 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
IRQ 188 QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK

[Memory]

Resource Device Status
0xA0000-0xBFFFF PCI bus OK
0xA0000-0xBFFFF Standard VGA Graphics Adapter OK
0xC0000-0xC3FFF PCI bus OK
0xC4000-0xC7FFF PCI bus OK
0xC8000-0xCBFFF PCI bus OK
0xCC000-0xCFFFF PCI bus OK
0xD0000-0xD3FFF PCI bus OK
0xD4000-0xD7FFF PCI bus OK
0xD8000-0xDBFFF PCI bus OK
0xDC000-0xDFFFF PCI bus OK
0xE0000-0xE3FFF PCI bus OK
0xE4000-0xE7FFF PCI bus OK
0xE8000-0xEBFFF PCI bus OK
0xEC000-0xEFFFF PCI bus OK
0xF0000-0xFFFFF PCI bus OK
0xFBC00000-0xFDFFFFFF PCI bus OK
0xFC000000-0xFCFFFFFF Standard VGA Graphics Adapter OK
0xFDFFF000-0xFDFFFFFF Standard VGA Graphics Adapter OK
0xFB800000-0xFBBFFFFF PCI bus OK
0xFBBFF000-0xFBBFFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0xFB400000-0xFB7FFFFF PCI bus OK
0xFB7FF000-0xFB7FFFFF Adaptec SCSI Card 39160 - Ultra160 SCSI OK
0xFB7FE000-0xFB7FEFFF Adaptec SCSI Card 39160 - Ultra160 SCSI OK
0xFB000000-0xFB3FFFFF PCI bus OK
0xFB3FF000-0xFB3FFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0xFAC00000-0xFAFFFFFF PCI bus OK
0xFAFC0000-0xFAFDFFFF Intel(R) PRO/1000 F Server Adapter #3 OK
0xFAFF0000-0xFAFFFFFF Intel(R) PRO/1000 F Server Adapter #3 OK
0xFA800000-0xFABFFFFF PCI bus OK
0xFABFF000-0xFABFFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0xFA400000-0xFA7FFFFF PCI bus OK
0xFA7FF000-0xFA7FFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0xFA000000-0xFA3FFFFF PCI bus OK
0xFA3FF000-0xFA3FFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0xF9C00000-0xF9FFFFFF PCI bus OK
0xF9FFF000-0xF9FFFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0xF9800000-0xF9BFFFFF PCI bus OK
0xF9BFF000-0xF9BFFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0xF9400000-0xF97FFFFF PCI bus OK
0xF97FF000-0xF97FFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0xF9000000-0xF93FFFFF PCI bus OK
0xF93FF000-0xF93FFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0xF8C00000-0xF8FFFFFF PCI bus OK
0xF8FFF000-0xF8FFFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK
0xE0000000-0xF8BFFFFF PCI bus OK
0xF8BFF000-0xF8BFFFFF QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) OK

[Components]

[Multimedia]

[Audio Codecs]

CODEC Manufacturer Description Status File Version Size Creation Date
c:\windows\system32\msg711.acm Microsoft Corporation OK C:\WINDOWS\system32\MSG711.ACM 5.2.3668.0 (main.020806-1624) 33.00 KB (33,792 bytes) 8/9/2002 9:00 PM
c:\windows\system32\imaadp32.acm Microsoft Corporation OK C:\WINDOWS\system32\IMAADP32.ACM 5.2.3668.0 (main.020806-1624) 55.00 KB (56,320 bytes) 8/9/2002 9:00 PM
c:\windows\system32\msgsm32.acm Microsoft Corporation OK C:\WINDOWS\system32\MSGSM32.ACM 5.2.3668.0 (main.020806-1624) 66.50 KB (68,096 bytes) 8/9/2002 9:00 PM
c:\windows\system32\tssoft32.acm DSP GROUP, INC. OK C:\WINDOWS\system32\TSSOFT32.ACM 1.01 29.00 KB (29,696 bytes) 8/9/2002 9:00 PM
c:\windows\system32\msadp32.acm Microsoft Corporation OK C:\WINDOWS\system32\MSADP32.ACM 5.2.3668.0 (main.020806-1624) 49.00 KB (50,176 bytes) 8/9/2002 9:00 PM

[Video Codecs]

CODEC Manufacturer Description Status File Version Size Creation Date
c:\windows\system32\msrle32.dll Microsoft Corporation OK C:\WINDOWS\system32\MSRLE32.DLL 5.2.3668.0 (main.020806-1624) 24.50 KB (25,088 bytes) 8/9/2002 9:00 PM
c:\windows\system32\msvidc32.dll Microsoft Corporation OK C:\WINDOWS\system32\MSVIDC32.DLL 5.2.3668.0 (main.020806-1624) 67.00 KB (68,608 bytes) 8/9/2002 9:00 PM

[CD-ROM]

Item Value

[Sound Device]

Item Value

[Display]

Item Value
Name Standard VGA Graphics Adapter
PNP Device ID PCI\VEN_1002&DEV_4752&SUBSYS_80EB1033&REV_27\3&267A616A&0&20
Adapter Type ATI MACH64, (Standard display types) compatible
Adapter Description Standard VGA Graphics Adapter

Adapter RAM 4.00 MB (4,194,304 bytes)
Installed Drivers vga.dll,framebuf.dll,vga256,vga64k
Driver Version 5.2.3668.0
INF File display.inf (vga section)
Color Planes 1
Color Table Entries 65536
Resolution 1024 x 768 x 1 hertz
Bits/Pixel 16
Memory Address 0xFC000000-0xFCFFFFFF
I/O Port 0x00001000-0x000010FF
Memory Address 0xFDFFF000-0xFDFFFFFF
I/O Port 0x000003B0-0x000003BB
I/O Port 0x000003C0-0x000003DF
Memory Address 0xA0000-0xBFFFF
Driver c:\windows\system32\drivers\vgapnp.sys (5.2.3668.0 (main.020806-1624), 67.38 KB (68,992 bytes), 8/22/2002 5:17 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\2
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 (5.2.3668.0 (main.020806-1624), 135.38 KB (138,624 bytes), 8/9/2002 9:00 PM)

[Pointing Device]

Item Value
Hardware Type PS/2 Compatible Mouse
Number of Buttons 2
Status OK
PNP Device ID ACPI\PNP0F13\2
Power Management Supported No
Double Click Threshold 6
Handedness Right Handed Operation
IRQ Channel IRQ 12
Driver c:\windows\system32\drivers\i8042prt.sys (5.2.3668.0 (main.020806-1624), 135.38 KB (138,624 bytes), 8/9/2002 9:00 PM)

[Modem]

Item Value

[Network]

[Adapter]

Item Value
Name [00000001] Intel(R) PRO/1000 F Server Adapter
Adapter Type Not Available
Product Type Intel(R) PRO/1000 F Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 9/5/2002 11:17 AM
Index 1
Service Name E1000
IP Address 10.1.1.222
IP Subnet 255.255.255.0
Default IP Gateway 10.1.1.254
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:03:47:00:40:A8

Name [00000002] RAS Async Adapter
Adapter Type Not Available
Product Type RAS Async Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 9/5/2002 11:17 AM
Index 2
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000003] WAN Miniport (L2TP)
Adapter Type Not Available
Product Type WAN Miniport (L2TP)
Installed Yes
PNP Device ID ROOT\MS_L2TPMINIPORT\0000
Last Reset 9/5/2002 11:17 AM
Index 3
Service Name Rasl2tp
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver c:\windows\system32\drivers\rasl2tp.sys (5.2.3668.0 (main.020806-1624), 177.63 KB (181,888 bytes), 8/9/2002 9:00 PM)

Name [00000004] WAN Miniport (PPTP)
Adapter Type Wide Area Network (WAN)
Product Type WAN Miniport (PPTP)
Installed Yes
PNP Device ID ROOT\MS_PPTPMINIPORT\0000
Last Reset 9/5/2002 11:17 AM
Index 4
Service Name PptpMiniport
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 50:50:54:50:30:30
Driver c:\windows\system32\drivers\raspptp.sys (5.2.3668.0 (main.020806-1624), 174.25 KB (178,432 bytes), 8/9/2002 9:00 PM)

Name [00000005] WAN Miniport (PPPOE)
Adapter Type Wide Area Network (WAN)
Product Type WAN Miniport (PPPOE)
Installed Yes
PNP Device ID ROOT\MS_PPPOEMINIPORT\0000
Last Reset 9/5/2002 11:17 AM
Index 5
Service Name RasPppoe
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 33:50:6F:45:30:30
Driver c:\windows\system32\drivers\raspppoe.sys (5.2.3668.0 (main.020806-1624), 115.13 KB (117,888 bytes), 8/9/2002 9:00 PM)

Name [00000006] Direct Parallel
Adapter Type Not Available
Product Type Direct Parallel
Installed Yes
PNP Device ID ROOT\MS_PTIMINIPORT\0000
Last Reset 9/5/2002 11:17 AM
Index 6
Service Name Raspti
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver c:\windows\system32\drivers\raspti.sys (5.2.3668.0 (main.020806-1624), 47.13 KB (48,256 bytes), 8/9/2002 9:00 PM)

Name [00000007] WAN Miniport (IP)
Adapter Type Not Available
Product Type WAN Miniport (IP)
Installed Yes
PNP Device ID ROOT\MS_NDISWANIP\0000
Last Reset 9/5/2002 11:17 AM
Index 7
Service Name NdisWan
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available

DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver c:\windows\system32\drivers\ndiswan.sys (5.2.3668.0 (main.020806-1624), 251.25 KB (257,280 bytes), 8/9/2002 9:00 PM)

Name [00000008] Intel(R) PRO/1000 F Server Adapter
Adapter Type Not Available
Product Type Intel(R) PRO/1000 F Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 9/5/2002 11:17 AM
Index 8
Service Name E1000
IP Address 10.1.1.222
IP Subnet 255.255.255.0
Default IP Gateway 10.1.1.254
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:03:47:00:40:A8

Name [00000009] Intel(R) PRO/1000 F Server Adapter
Adapter Type Ethernet 802.3
Product Type Intel(R) PRO/1000 F Server Adapter
Installed Yes
PNP Device ID PCI\VEN_8086&DEV_1001&SUBSYS_10038086&REV_02\3&20FEA912&0&10
Last Reset 9/5/2002 11:17 AM
Index 9
Service Name E1000
IP Address 10.1.1.222
IP Subnet 255.255.255.0
Default IP Gateway 10.1.1.254
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:03:47:00:40:A8
Memory Address 0xFAFC0000-0xFAFDFFFF
Memory Address 0xFAFF0000-0xFAFFFFFF
IRQ Channel IRQ 78
Driver c:\windows\system32\drivers\e1000645.sys (6.3.2.0 built by: WinDDK, 381.00 KB (390,144 bytes), 8/22/2002 5:17 AM)

Name [00000010] Intel(R) PRO/1000 F Server Adapter
Adapter Type Not Available
Product Type Intel(R) PRO/1000 F Server Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 9/5/2002 11:17 AM
Index 10
Service Name E1000
IP Address 10.1.1.222
IP Subnet 255.255.255.0
Default IP Gateway 10.1.1.254
DHCP Enabled Yes
DHCP Server 255.255.255.255
DHCP Lease Expires 1/1/1970 8:59 AM
DHCP Lease Obtained 8/29/2002 8:44 PM
MAC Address 00:03:47:00:40:A8

[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 5.2.3668.0 (main.020806-1624)

[Ports]

[Serial]

Item Value
Name Communications Port (COM2)
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 0x000002F8-0x000002FF
IRQ Channel IRQ 245
Driver c:\windows\system32\drivers\serial.sys (5.2.3668.0 (main.020806-1624), 175.88 KB (180,096 bytes), 8/9/2002 9:00 PM)

Name Communications Port (COM1)
Status OK
PNP Device ID ACPI\PNP0501\2
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 (5.2.3668.0 (main.020806-1624), 175.88 KB (180,096 bytes), 8/9/2002 9:00 PM)

[Parallel]

Item Value

[Storage]

[Drives]

Item Value
Drive C:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 8.34 GB (8,957,329,408 bytes)
Free Space 2.86 GB (3,067,985,920 bytes)
Volume Name
Volume Serial Number 8476C00F

Drive D:
Description CD-ROM Disc

Drive E:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 30.01 GB (32,218,419,200 bytes)
Free Space 29.93 GB (32,141,430,784 bytes)
Volume Name New Volume
Volume Serial Number B45CB308

Drive F:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive G:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 30.01 GB (32,218,419,200 bytes)
Free Space 29.93 GB (32,141,430,784 bytes)
Volume Name
Volume Serial Number CC5D581A

Drive H:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 30.01 GB (32,218,419,200 bytes)
Free Space 29.93 GB (32,141,430,784 bytes)
Volume Name New Volume
Volume Serial Number A89EFB32

Drive I:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive J:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive K:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive L:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 174.43 GB (187,297,849,344 bytes)
Free Space 103.34 GB (110,958,686,208 bytes)
Volume Name b026
Volume Serial Number 44D2F661

Drive M:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 30.01 GB (32,218,419,200 bytes)
Free Space 29.93 GB (32,141,467,648 bytes)
Volume Name New Volume
Volume Serial Number 28D42475

Drive N:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 30.01 GB (32,218,419,200 bytes)
Free Space 29.93 GB (32,141,467,648 bytes)
Volume Name New Volume
Volume Serial Number 88DE21C0

Drive O:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 30.01 GB (32,218,419,200 bytes)
Free Space 29.93 GB (32,141,467,648 bytes)
Volume Name New Volume
Volume Serial Number 84F45EC1

Drive P:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available

Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive Q:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 174.43 GB (187,297,849,344 bytes)
Free Space 103.34 GB (110,958,596,096 bytes)
Volume Name b002
Volume Serial Number C05A5C00

Drive R:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive S:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive T:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 174.43 GB (187,297,849,344 bytes)
Free Space 103.34 GB (110,958,596,096 bytes)
Volume Name b003
Volume Serial Number 7868936E

Drive U:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive V:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive W:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 174.43 GB (187,297,849,344 bytes)
Free Space 103.34 GB (110,958,596,096 bytes)
Volume Name b004
Volume Serial Number 68746836

Drive X:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive Y:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 30.01 GB (32,218,419,200 bytes)
Free Space 29.93 GB (32,141,467,648 bytes)
Volume Name New Volume
Volume Serial Number D0F88AEF

Drive Z:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 33.01 GB (35,442,728,960 bytes)
Free Space 28.99 GB (31,127,060,480 bytes)
Volume Name Junction
Volume Serial Number E49EA6BB

[Disks]

Item Value
Description Disk drive
Manufacturer (Standard disk drives)
Model IBM DDYS-T09170M SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 12
SCSI Target ID 11
Sectors/Track 63
Size 8.54 GB (9,171,187,200 bytes)
Total Cylinders 1,115
Total Sectors 17,912,475
Total Tracks 284,325
Tracks/Cylinder 255
Partition Disk #93, Partition #0
Partition Size 101.94 MB (106,896,384 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #93, Partition #1
Partition Size 8.41 GB (9,031,357,440 bytes)
Partition Starting Offset 139,829,760 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 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 10
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #74, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #74, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #74, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 10
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #75, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #75, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #75, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 10
SCSI Target ID 0

Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #76, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #76, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #76, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 10
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #77, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #77, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #77, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 10
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #78, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #78, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #78, Partition #2
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 48,331,745,280 bytes
Partition Disk #78, Partition #3
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 10
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #79, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #79, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #79, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 10
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #80, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #80, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #80, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 10
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #81, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #81, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #81, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 8
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #56, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #56, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #56, Partition #2
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 48,331,745,280 bytes
Partition Disk #56, Partition #3
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)

Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 8
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #57, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #57, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #57, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 8
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #58, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #58, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #58, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 8
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #59, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #59, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #59, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 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 8
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #60, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #60, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #60, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 8
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #61, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #61, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #61, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 8
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #62, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #62, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #62, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 8
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #63, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #63, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #63, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 2
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #2, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #2, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #2, Partition #2
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 48,331,745,280 bytes
Partition Disk #2, Partition #3
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 2
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #3, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #3, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #3, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 2
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #4, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #4, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #4, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 2
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #5, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #5, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #5, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 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 2
SCSI Target ID 1
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #6, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #6, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #6, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 2
SCSI Target ID 1
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #7, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #7, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #7, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 2
SCSI Target ID 1
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #8, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes

Partition Disk #8, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #8, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 2
SCSI Target ID 1
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #9, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #9, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #9, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 11
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #83, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #83, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #83, Partition #2
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 48,331,745,280 bytes
Partition Disk #83, Partition #3
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 11
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #84, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #84, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #84, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 11
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #85, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #85, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #85, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 11
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #86, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #86, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #86, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 11
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #87, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #87, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #87, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 11
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565

Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #88, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #88, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #88, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 11
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #89, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #89, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #89, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 11
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #90, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #90, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #90, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 3
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #11, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #11, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #11, Partition #2
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 48,331,745,280 bytes
Partition Disk #11, Partition #3
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 3
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #12, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #12, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #12, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 3
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #13, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #13, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #13, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 3
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #14, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #14, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #14, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 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 3
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #15, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #15, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #15, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 3
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #16, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #16, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #16, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 3
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #17, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #17, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #17, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 3
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #18, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #18, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #18, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 9
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #65, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #65, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #65, Partition #2
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 48,331,745,280 bytes
Partition Disk #65, Partition #3
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 9
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #66, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #66, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #66, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 9
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #67, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #67, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #67, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)

Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 9
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #68, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #68, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #68, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 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 9
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #69, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #69, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #69, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 9
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #70, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #70, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #70, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 9
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #71, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #71, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #71, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 9
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #72, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #72, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #72, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 1
SCSI Target ID 0
Sectors/Track 63
Size 233.01 GB (250,196,567,040 bytes)
Total Cylinders 30,418
Total Sectors 488,665,170
Total Tracks 7,756,590
Tracks/Cylinder 255
Partition Disk #0, Partition #0
Partition Size 200.00 GB (214,745,577,984 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #0, Partition #1
Partition Size 33.01 GB (35,442,731,520 bytes)
Partition Starting Offset 214,745,610,240 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 1
SCSI Target ID 0
Sectors/Track 63
Size 233.01 GB (250,196,567,040 bytes)
Total Cylinders 30,418
Total Sectors 488,665,170
Total Tracks 7,756,590
Tracks/Cylinder 255
Partition Disk #1, Partition #0
Partition Size 200.01 GB (214,753,803,264 bytes)
Partition Starting Offset 32,256 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0

SCSI Logical Unit 0
SCSI Port 4
SCSI Target ID 0
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #20, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #20, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #20, Partition #2
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 48,331,745,280 bytes
Partition Disk #20, Partition #3
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 4
SCSI Target ID 0
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #21, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #21, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #21, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 4
SCSI Target ID 0
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #22, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #22, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #22, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 4
SCSI Target ID 0
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #23, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #23, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #23, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 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 4
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #24, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #24, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #24, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 4
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #25, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #25, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #25, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 4
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #26, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #26, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #26, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)

Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 4
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #27, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #27, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #27, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 7
SCSI Target ID 0
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #47, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #47, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #47, Partition #2
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 48,331,745,280 bytes
Partition Disk #47, Partition #3
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 7
SCSI Target ID 0
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #48, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #48, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #48, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 7
SCSI Target ID 0
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #49, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #49, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #49, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 7
SCSI Target ID 0
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #50, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #50, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #50, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 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 7
SCSI Target ID 1
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #51, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #51, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #51, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 7
SCSI Target ID 1
Sectors/Track 63
Size 246.47 GB (264,640,158,720 bytes)
Total Cylinders 32,174
Total Sectors 516,875,310
Total Tracks 8,204,370
Tracks/Cylinder 255
Partition Disk #52, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #52, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes

Partition Disk #52, Partition #2
Partition Size 171.45 GB (184,089,991,680 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 7
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #53, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #53, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #53, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 7
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #54, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #54, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #54, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 6
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #38, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #38, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #38, Partition #2
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 48,331,745,280 bytes
Partition Disk #38, Partition #3
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 6
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #39, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #39, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #39, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 6
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #40, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #40, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #40, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 6
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #41, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #41, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #41, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 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 6
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255

Partition Disk #42, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #42, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #42, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 6
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #43, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #43, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #43, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 6
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #44, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #44, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #44, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 6
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #45, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #45, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #45, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 4
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 5
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #29, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #29, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #29, Partition #2
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 48,331,745,280 bytes
Partition Disk #29, Partition #3
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 5
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #30, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #30, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #30, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 5
SCSI Target ID 0
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #31, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #31, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #31, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 5
SCSI Target ID 0

Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #32, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #32, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #32, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 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 5
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #33, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #33, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #33, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 1
SCSI Port 5
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #34, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #34, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #34, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 2
SCSI Port 5
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #35, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #35, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #35, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model NEC iStorage 2000 SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 0
SCSI Logical Unit 3
SCSI Port 5
SCSI Target ID 1
Sectors/Track 63
Size 249.46 GB (267,856,243,200 bytes)
Total Cylinders 32,565
Total Sectors 523,156,725
Total Tracks 8,304,075
Tracks/Cylinder 255
Partition Disk #36, Partition #0
Partition Size 15.01 GB (16,113,291,264 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #36, Partition #1
Partition Size 30.01 GB (32,218,421,760 bytes)
Partition Starting Offset 16,113,323,520 bytes
Partition Disk #36, Partition #2
Partition Size 174.43 GB (187,297,850,880 bytes)
Partition Starting Offset 80,550,167,040 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model QLOGIC PSEUDO DEVICE SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 10
SCSI Target ID 127
Sectors/Track 0
Size 0 bytes
Total Cylinders 0
Total Sectors 0
Total Tracks 0
Tracks/Cylinder 0

Description Disk drive
Manufacturer (Standard disk drives)
Model Not Available
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 8
SCSI Target ID 127
Sectors/Track 0
Size 0 bytes
Total Cylinders 0
Total Sectors 0
Total Tracks 0
Tracks/Cylinder 0

Description Disk drive
Manufacturer (Standard disk drives)
Model QLOGIC PSEUDO DEVICE SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 2
SCSI Target ID 127
Sectors/Track 0
Size 0 bytes
Total Cylinders 0
Total Sectors 0
Total Tracks 0
Tracks/Cylinder 0

Description Disk drive
Manufacturer (Standard disk drives)
Model QLOGIC PSEUDO DEVICE SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0

SCSI Logical Unit 0
SCSI Port 11
SCSI Target ID 127
Sectors/Track 0
Size 0 bytes
Total Cylinders 0
Total Sectors 0
Total Tracks 0
Tracks/Cylinder 0

Description Disk drive
Manufacturer (Standard disk drives)
Model QLOGIC PSEUDO DEVICE SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 3
SCSI Target ID 127
Sectors/Track 0
Size 0 bytes
Total Cylinders 0
Total Sectors 0
Total Tracks 0
Tracks/Cylinder 0

Description Disk drive
Manufacturer (Standard disk drives)
Model QLOGIC PSEUDO DEVICE SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 9
SCSI Target ID 127
Sectors/Track 0
Size 0 bytes
Total Cylinders 0
Total Sectors 0
Total Tracks 0
Tracks/Cylinder 0

Description Disk drive
Manufacturer (Standard disk drives)
Model QLOGIC PSEUDO DEVICE SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 4
SCSI Target ID 127
Sectors/Track 0
Size 0 bytes
Total Cylinders 0
Total Sectors 0
Total Tracks 0
Tracks/Cylinder 0

Description Disk drive
Manufacturer (Standard disk drives)
Model QLOGIC PSEUDO DEVICE SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 7
SCSI Target ID 127
Sectors/Track 0
Size 0 bytes
Total Cylinders 0
Total Sectors 0
Total Tracks 0
Tracks/Cylinder 0

Description Disk drive
Manufacturer (Standard disk drives)
Model QLOGIC PSEUDO DEVICE SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 6
SCSI Target ID 127
Sectors/Track 0
Size 0 bytes
Total Cylinders 0
Total Sectors 0
Total Tracks 0
Tracks/Cylinder 0

Description Disk drive
Manufacturer (Standard disk drives)
Model QLOGIC PSEUDO DEVICE SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 5
SCSI Target ID 127
Sectors/Track 0
Size 0 bytes
Total Cylinders 0
Total Sectors 0
Total Tracks 0
Tracks/Cylinder 0

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST39102LC SCSI Disk Device
Bytes/Sector 512
Media Loaded No
Media Type Fixed hard disk
Partitions Not Available
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 12
SCSI Target ID 10
Sectors/Track 63
Size 8.47 GB (9,097,159,680 bytes)
Total Cylinders 1,106
Total Sectors 17,767,890
Total Tracks 282,030
Tracks/Cylinder 255
Partition Disk #92, Partition #0
Partition Size 101.94 MB (106,896,384 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #92, Partition #1
Partition Size 8.34 GB (8,957,329,920 bytes)
Partition Starting Offset 139,829,760 bytes

[SCSI]

Item Value

[IDE]

Item Value
Name Intel(r) IA64 Bus Master IDE Controller
Manufacturer Intel
Status OK
PNP Device ID
PCI\VEN_8086&DEV_7601&SUBSYS_01061033&REV_01\3&267A616A&0&11
I/O Port 0x00001120-0x0000112F
Driver c:\windows\system32\drivers\intelide.sys (5.2.3668.0 (main.020806-1624), 8.75 KB (8,960 bytes), 8/9/2002 9:00 PM)

Name Primary IDE Channel
Manufacturer (Standard IDE ATA/ATAPI controllers)
Status OK
PNP Device ID PCIIDE\IDECHANNEL\4&31FC9C45&0&0
I/O Port 0x000001F0-0x000001F7
I/O Port 0x000003F6-0x000003F6
IRQ Channel IRQ 14
Driver c:\windows\system32\drivers\atapi.sys (5.2.3668.0 (main.020806-1624), 285.75 KB (292,608 bytes), 8/9/2002 9:00 PM)

[Printing]

Name Driver Port Name Server Name

[Problem Devices]

Device PNP Device ID Error Code
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&267A616A&0&08 The drivers for this device are not installed.
Not Available ACPI\NEC4171\0 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FD&SUBSYS_00FD1033&REV_00\3&267A616A&0&70 The drivers for this device are not installed.

System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&1070020&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&172E68DD&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&E44F86D&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&33B859B7&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&23C0707C&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&1B2F0CE&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&27265218&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&A985F74&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&300BC0BE&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&19E45801&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&3BCEF44&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&23FF515D&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&D525062&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&32C5B1AC&0&08 The drivers for this device are not installed.
System Interrupt Controller
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&309158FC&0&08 The drivers for this device are not installed.

[USB]

Device PNP Device ID
Intel(r) 82372FB PCI to USB Universal Host Controller
PCI\VEN_8086&DEV_7602&SUBSYS_01061033&REV_01\3&267A616A&0&12
USB Root Hub USB\ROOT_HUB\4&5C3BD33&0

[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		Yes	Boot	Running
	OK	Normal	No	Yes	
adpu320	adpu320	Not Available		Kernel Driver	
	No	Disabled	Stopped	OK	Normal
	No	No			
afcnt	afcnt	Not Available		Kernel Driver	
	No	Disabled	Stopped	OK	Normal
	No	No			
afd	AFD Networking Support Environment				
	c:\windows\system32\drivers\afd.sys				Kernel
Driver	Yes	Auto	Running	OK	Normal
	No	Yes			
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			
asyncmac	RAS Asynchronous Media Driver				
	c:\windows\system32\drivers\asyncmac.sys				Kernel
Driver	No	Manual	Stopped	OK	Normal
	No	No			
atapi	Standard IDE/ESDI Hard Disk Controller				
	c:\windows\system32\drivers\atapi.sys				Kernel
Driver	Yes	Boot	Running	OK	Normal
	No	Yes			
atdisk	Atdisk	Not Available		Kernel Driver	
	No	Disabled	Stopped	OK	Ignore
	No	No			
atmarpc	ATM ARP Client Protocol				
	c:\windows\system32\drivers\atmarpc.sys				Kernel
Driver	No	Manual	Stopped	OK	Normal
	No	No			
audstub	Audio Stub Driver				
	c:\windows\system32\drivers\audstub.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\cbidf2k.sys			
	Kernel Driver		No	Disabled	Stopped
	OK	Normal	No	No	
cdfs	Cdfs	c:\windows\system32\drivers\cdfs.sys			
	File System Driver		Yes	Disabled	Running
	OK	Normal	No	Yes	
cdrom	CD-ROM Driver				
	c:\windows\system32\drivers\cdrom.sys				Kernel
Driver	Yes	System	Running	OK	Normal
	No	Yes			
changer	Changer	Not Available		Kernel Driver	
	No	System	Stopped	OK	Ignore
	No	No			
clusdisk	Cluster Disk Driver				
	c:\windows\system32\drivers\clusdisk.sys				Kernel
Driver	No	Disabled	Stopped	OK	Normal
	No	No			
cmdide	CmdIde	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\crcdisk.sys				Kernel
Driver	Yes	Boot	Running	OK	Normal
	No	Yes			
dfsdriver	DfsDriver	c:\windows\system32\drivers\dfs.sys			
	File System Driver		Yes	Boot	Running
	OK	Normal	No	Yes	
disk	Disk Driver	c:\windows\system32\drivers\disk.sys			
	Kernel Driver		Yes	Boot	Running
	OK	Normal	No	Yes	
dmboot	dmboot	c:\windows\system32\drivers\dmboot.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\dmload.sys			
	Kernel Driver		Yes	Boot	Running
	OK	Normal	No	Yes	
dpti2o	dpti2o	Not Available		Kernel Driver	
	No	Disabled	Stopped	OK	Normal
	No	No			
e1000	Intel(R) PRO/1000 Device Driver				
	c:\windows\system32\drivers\e1000645.sys				Kernel
Driver	Yes	Manual	Running	OK	Normal
	No	Yes			
fastfat	Fastfat	c:\windows\system32\drivers\fastfat.sys			
	File System Driver		No	Disabled	Stopped
	OK	Normal	No	No	
fdc	Fdc	c:\windows\system32\drivers\fdc.sys			
	Kernel Driver		No	System	Stopped
	OK	Ignore	No	No	

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fips        Fips        c:\windows\system32\drivers\fips.sys
            Kernel Driver           Yes         System      Running
            OK          Normal      No          Yes
flpydisk    Flpydisk    c:\windows\system32\drivers\flpydisk.sys
            Kernel Driver           No          System      Stopped
            OK          Ignore      No          No
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\msgpc.sys           Kernel
Driver      Yes         Manual      Running     OK          Normal
            No          Yes
hpn         hpn         Not Available           Kernel Driver
            No          Disabled    Stopped     OK          Normal
            No          No
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
i8042prt    i8042 Keyboard and PS/2 Mouse Port Driver
            c:\windows\system32\drivers\i8042prt.sys        Kernel
Driver      Yes         System      Running     OK          Normal
            No          Yes
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           Yes         Boot        Running
            OK          Normal      No          Yes
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
            No          Yes
isapnp      PnP ISA/EISA Bus Driver
            c:\windows\system32\drivers\isapnp.sys          Kernel
Driver      Yes         Boot        Running     OK          Critical
            No          Yes
kbdclass    Keyboard Class Driver
            c:\windows\system32\drivers\kbdclass.sys        Kernel
Driver      Yes         System      Running     OK          Normal
            No          Yes
ksecdd      KSecDD      c:\windows\system32\drivers\ksecdd.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       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
mountmgr    Mount Point Manager
            c:\windows\system32\drivers\mountmgr.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\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
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      Yes         Manual      Running     OK          Normal
            No          Yes
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     Not Available           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.sys
            File System Driver      Yes         Disabled    Running
            OK          Normal      No          Yes
null        Null        c:\windows\system32\drivers\null.sys
            Kernel Driver           Yes         System      Running
            OK          Normal      No          Yes
partmgr     Partition Manager
            c:\windows\system32\drivers\partmgr.sys         Kernel
Driver      Yes         Boot        Running     OK          Normal
            No          Yes
pci         PCI Bus Driver
            c:\windows\system32\drivers\pci.sys             Kernel
Driver      Yes         Boot        Running     OK          Critical
            No          Yes
pciide      PCIIde      Not Available           Kernel Driver
            No          Disabled    Stopped     OK          Normal
            No          No
pcmcia      Pcmcia      c:\windows\system32\drivers\pcmcia.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\raspptp.sys         Kernel
Driver      Yes         Manual      Running     OK          Normal
            No          Yes
processor   Processor Driver
            c:\windows\system32\drivers\processr.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      Not Available           Kernel Driver
            No          Disabled    Stopped     OK          Normal
            No          No
ql10wnt     Ql10wnt     Not Available           Kernel Driver
            No          Disabled    Stopped     OK          Normal
            No          No
ql12160     ql12160     Not Available           Kernel Driver
            No          Disabled    Stopped     OK          Normal
            No          No
ql1240      ql1240      Not Available           Kernel Driver
            No          Disabled    Stopped     OK          Normal
            No          No
ql1280      ql1280      Not Available           Kernel Driver
            No          Disabled    Stopped     OK          Normal
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        No          No
ql2100  ql2100      Not Available           Kernel Driver
        No          Disabled    Stopped     OK          Normal
        No          No
ql2200  ql2200      c:\windows\system32\drivers\ql2200.sys
        Kernel Driver           Yes         Boot        Running
        OK          Normal      No          Yes
ql2300  ql2300      Not Available           Kernel Driver
        No          Disabled    Stopped     OK          Normal
        No          No
qldirect qldirect   c:\windows\system32\drivers\qldirect.sys
        Kernel Driver           Yes         Boot        Running
        OK          Normal      No          Yes
rasacd  Remote Access Auto Connection Driver
        c:\windows\system32\drivers\rasacd.sys      Kernel
Driver  Yes         System      Running     OK          Normal
        No          Yes
rasl2tp WAN Miniport (L2TP)
        c:\windows\system32\drivers\rasl2tp.sys     Kernel
Driver  Yes         Manual      Running     OK          Normal
        No          Yes
raspppoe Remote Access PPPOE Driver
        c:\windows\system32\drivers\raspppoe.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\rdpcdd.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\rdpwd.sys
        Kernel Driver           Yes         Manual      Running
        OK          Ignore      No          Yes
redbook Digital CD Audio Playback Filter Driver
        c:\windows\system32\drivers\redbook.sys     Kernel
Driver  Yes         System      Running     OK          Normal
        No          Yes
serenum Serenum Filter Driver
        c:\windows\system32\drivers\serenum.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\sfloppy.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.sys
        File System Driver      Yes         Manual      Running
        OK          Normal      No          Yes
swenum  Software Bus Driver
        c:\windows\system32\drivers\swenum.sys      Kernel
Driver  Yes         Manual      Running     OK          Normal
        No          Yes
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
tbs     tbs         \??\c:\windows\system32\drivers\tbs.sys
        Kernel Driver           No          Manual      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\tdpipe.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\termdd.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.sys
        File System Driver      No          Disabled    Stopped
        OK          Normal      No          No
usbhub  USB2 Enabled Hub
        c:\windows\system32\drivers\usbhub.sys      Kernel
Driver  Yes         Manual      Running     OK          Normal
        No          Yes
usbuhci Microsoft USB Universal Host Controller Miniport Driver
        c:\windows\system32\drivers\usbuhci.sys     Kernel
Driver  Yes         Manual      Running     OK          Normal
        No          Yes
vga     vga         c:\windows\system32\drivers\vgapnp.sys
        Kernel Driver           Yes         Manual      Running
        OK          Ignore      No          Yes
vgasave VGA Display Controller.
        c:\windows\system32\drivers\vga.sys         Kernel
Driver  No          System      Stopped     OK          Ignore
        No          No
viaide  ViaIde      Not Available           Kernel Driver
        No          Disabled    Stopped     OK          Normal
        No          No
volsnap VolSnap     c:\windows\system32\drivers\volsnap.sys
        Kernel Driver           Yes         Boot        Running
        OK          Normal      No          Yes
wanarp  Remote Access IP ARP Driver
        c:\windows\system32\drivers\wanarp.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
Not Available           Not Available           Not Available
            Not Available           Not Available           Not
Available   Not Available           Not Available
            HTREE\ROOT\0
ACPI IA64-based PC      Yes         COMPUTER                5.2.3668.0
            8/6/2002    (Standard computers)    hal.inf     Not
Available   ROOT\ACPI_HAL\0000
Microsoft ACPI-Compliant System Yes SYSTEM      5.2.3668.0
            8/6/2002    Microsoft   acpi.inf    Not Available
            ACPI_HAL\PNP0C08\0
Processor   Yes         PROCESSOR               5.2.3668.0  8/6/2002
            (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_IA64_FAMILY_31_MODEL_0\_0
Processor   Yes         PROCESSOR               5.2.3668.0  8/6/2002
            (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_IA64_FAMILY_31_MODEL_0\_1
Processor   Yes         PROCESSOR               5.2.3668.0  8/6/2002
            (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_IA64_FAMILY_31_MODEL_0\_2
Processor   Yes         PROCESSOR               5.2.3668.0  8/6/2002
            (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_IA64_FAMILY_31_MODEL_0\_3
Processor   Yes         PROCESSOR               5.2.3668.0  8/6/2002
            (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_IA64_FAMILY_31_MODEL_0\_4
Processor   Yes         PROCESSOR               5.2.3668.0  8/6/2002
            (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_IA64_FAMILY_31_MODEL_0\_5
Processor   Yes         PROCESSOR               5.2.3668.0  8/6/2002
            (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_IA64_FAMILY_31_MODEL_0\_6
Processor   Yes         PROCESSOR               5.2.3668.0  8/6/2002
            (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_IA64_FAMILY_31_MODEL_0\_7
Processor   Yes         PROCESSOR               5.2.3668.0  8/6/2002
            (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_IA64_FAMILY_31_MODEL_0\_8
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Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0_9
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\10
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\11
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\12
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\13
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\14
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\15
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\16
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\17
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\18
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\19
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\20
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\21
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\22
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\23
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\24
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\25
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\26
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\27
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\28
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\29
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\30
Processor Yes PROCESSOR 5.2.3668.0 8/6/2002 (Standard processor types) cpu.inf Not Available ACPI\GENUINEINTEL_-_IA64_FAMILY_31_MODEL_0\31
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\0
System Interrupt Controller Not Available UNKNOWN Not Available Not Available
Not Available Not Available PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&267A616A&0&08
Intel 82372FB PCI to ISA Bridge Yes SYSTEM 5.2.3668.0 8/6/2002 Intel machine.inf Not Available PCI\VEN_8086&DEV_7600&SUBSYS_00000000&REV_01\3&267A616A&0&10
Direct memory access controller Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0200\4&22C34DB0&0
Programmable interrupt controller Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0000\4&22C34DB0&0
System timer Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0100\4&22C34DB0&0
System speaker Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0800\4&22C34DB0&0
System CMOS/real time clock Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0B00\4&22C34DB0&0
Numeric data processor Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0C04\4&22C34DB0&0
Generic Bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A05\4&22C34DB0&0
Extended IO Bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A06\1
Motherboard resources Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0C02\1
Extended IO Bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A06\3
Motherboard resources Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0C02\3
Standard 101/102-Key or Microsoft Natural PS/2 Keyboard Yes KEYBOARD 5.2.3668.0 8/6/2002 (Standard keyboards) keyboard.inf Not Available ACPI\PNP0303\2
PS/2 Compatible Mouse Yes MOUSE 5.2.3668.0 8/6/2002 Microsoft msmouse.inf Not Available ACPI\PNP0F13\2
Communications Port Yes PORTS 5.2.3668.0 8/6/2002 (Standard port types) msports.inf Not Available ACPI\PNP0501\2
Extended IO Bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A06\4
Not Available Not Available Not Available Not Available Not Available Not Available Not Available ACPI\NEC4171\0
Intel(r) IA64 Bus Master IDE Controller Yes HDC 5.2.3668.0 8/6/2002 Intel mshdc.inf Not Available PCI\VEN_8086&DEV_7601&SUBSYS_01061033&REV_01\3&267A616A&0&11
Primary IDE Channel Yes HDC 5.2.3668.0 8/6/2002 (Standard IDE ATA/ATAPI controllers) mshdc.inf Not Available PCIIDE\IDECHANNEL\4&31FC9C45&0&0
CD-ROM Drive Yes CDROM 5.2.3668.0 8/6/2002 (Standard CD-ROM drives) cdrom.inf Not Available IDE\CDROM_NEC_DVD-ROM_DV-5800A_____1.42____\5&8F26A51&0&0.0.0
Intel(r) 82372FB PCI to USB Universal Host Controller Yes USB 5.2.3668.0 8/6/2002 Intel usbport.inf Not Available PCI\VEN_8086&DEV_7602&SUBSYS_01061033&REV_01\3&267A616A&0&12
USB Root Hub Yes USB 5.2.3668.0 8/6/2002 (Standard USB Host Controller) usbport.inf Not Available USB\ROOT_HUB\4&5C3BD33&0
Standard VGA Graphics Adapter Yes DISPLAY 5.2.3668.0 8/6/2002 (Standard display types) display.inf Not Available PCI\VEN_1002&DEV_4752&SUBSYS_80EB1033&REV_27\3&267A616A&0&20
Default Monitor Yes MONITOR 5.1.2001.0 6/6/2001 (Standard monitor types) monitor.inf Not Available DISPLAY\DEFAULT_MONITOR\4&20D43725&0&123456

78&00&04
System Interrupt Controller Not Available
UNKNOWN Not Available Not Available Not Available Not Available Not Available
PCI\VEN_1033&DEV_00FD&SUBSYS_00FD1033&REV_00\3&267A616A&0&70
PCI standard host CPU bridge Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
PCI\VEN_1033&DEV_00F9&SUBSYS_00000000&REV_02\3&267A616A&0&78
PCI standard host CPU bridge Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
PCI\VEN_1033&DEV_00F9&SUBSYS_00000000&REV_02\3&267A616A&0&80
PCI standard host CPU bridge Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
PCI\VEN_1033&DEV_00F9&SUBSYS_00000000&REV_02\3&267A616A&0&88
PCI standard host CPU bridge Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
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PCI standard host CPU bridge Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
PCI\VEN_1033&DEV_00F9&SUBSYS_00000000&REV_02\3&267A616A&0&98
PCI standard host CPU bridge Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
PCI\VEN_1033&DEV_00F9&SUBSYS_00000000&REV_02\3&267A616A&0&A0
PCI standard host CPU bridge Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
PCI\VEN_1033&DEV_00F9&SUBSYS_00000000&REV_02\3&267A616A&0&A8
PCI standard host CPU bridge Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
PCI\VEN_1033&DEV_00F9&SUBSYS_00000000&REV_02\3&267A616A&0&B0
PCI standard host CPU bridge Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
PCI\VEN_1033&DEV_00F9&SUBSYS_00000000&REV_02\3&267A616A&0&B8
Communications Port Yes PORTS 5.2.3668.0 8/6/2002 (Standard port types) msports.inf Not Available
ACPI\PNP0501\1
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\1
QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) No SCSIADAPTER 8.1.0.0 10/2/2001 QLogic oem0.inf Not Available
PCI\VEN_1077&DEV_2200&SUBSYS_00021077&REV_05\3&13C0B0C5&0&10
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&347EB69&0&000
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&347EB69&0&001
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\2
System Interrupt Controller Not Available
UNKNOWN Not Available Not Available Not Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&1070020&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\3
Adaptec SCSI Card 39160 - Ultra160 SCSI Yes SCSIADAPTER 5.2.3668.0 8/6/2002 Adaptec pnpscsi.inf Not Available
PCI\VEN_9005&DEV_00C0&SUBSYS_F6209005&REV_01\3&29E81982&0&10
Qlogic processor device Yes SYSTEM 5.2.3668.0 8/6/2002 QLOGIC scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&PROD_GEM359&REV_1.06\4&2A90A95D&0&040
Qlogic processor device Yes SYSTEM 5.2.3668.0 8/6/2002 QLOGIC scsidev.inf Not Available
SCSI\PROCESSOR&VEN_QLOGIC&PROD_GEM359&REV_1.06\4&2A90A95D&0&050
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_SEAGATE&PROD_ST39102LC&REV_0004\4&2A90A95D&0&0A0
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_IBM&PROD_DDYS-T09170M&REV_S92A\4&2A90A95D&0&0B0
Adaptec SCSI Card 39160 - Ultra160 SCSI Yes SCSIADAPTER 5.2.3668.0 8/6/2002 Adaptec pnpscsi.inf Not Available
PCI\VEN_9005&DEV_00C0&SUBSYS_F6209005&REV_01\3&29E81982&0&11
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\4
System Interrupt Controller Not Available
UNKNOWN Not Available Not Available Not Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&172E68DD&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\5
QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) No SCSIADAPTER 8.1.0.0 10/2/2001 QLogic oem0.inf Not Available
PCI\VEN_1077&DEV_2200&SUBSYS_00021077&REV_05\3&474B838&0&10
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&154E0541&0&001
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&154E0541&0&002
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&154E0541&0&003
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&154E0541&0&011
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&154E0541&0&013
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_QLOGIC&PROD_PSEUDO_DEVICE&REV_\4&154E0541&0&07F0
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\6
System Interrupt Controller Not Available Not Available Not Available Not Available Not Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&E44F86D&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\7
Intel(R) PRO/1000 F Server Adapter Yes NET 6.3.2.0 8/6/2002 Intel nete1000.inf Not Available
PCI\VEN_8086&DEV_1001&SUBSYS_10038086&REV_02\3&20FEA912&0&10
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\8
System Interrupt Controller Not Available Not Available Not Available Not Available Not Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&33B859B7&0&08

PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\9
QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)
No SCSIADAPTER 8.1.0.0 10/2/2001
QLogic oem0.inf Not Available
PCI\VEN_1077&DEV_2200&SUBSYS_00021077&REV_05\3&AD74055&0&10
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&2FE37568&0&000
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_QLOGIC&PROD_PSEUDO_DEVICE&REV_\4&2FE37568&0&07F0
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\A
System Interrupt Controller Not Available Not Available Not Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&23C0707C&0&08
QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)
No SCSIADAPTER 8.1.0.0 10/2/2001
QLogic oem0.inf Not Available
PCI\VEN_1077&DEV_2200&SUBSYS_00021077&REV_05\3&23C0707C&0&10
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&367E7470&0&000
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_QLOGIC&PROD_PSEUDO_DEVICE&REV_\4&367E7470&0&07F0
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\B
QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)
No SCSIADAPTER 8.1.0.0 10/2/2001
QLogic oem0.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&6A8DA4&0&013
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_QLOGIC&PROD_PSEUDO_DEVICE&REV_\4&6A8DA4&0&07F0
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\C
System Interrupt Controller Not Available Not Available Not Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&1B2F0CE&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\D
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\E
System Interrupt Controller Not Available Not Available Not Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&27265218&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
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PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\10
System Interrupt Controller Not Available Not Available Not Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&A985F74&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\11
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\12
System Interrupt Controller Not Available Not Available Not Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&300BC0BE&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available
ACPI\PNP0A03\13
QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)
No SCSIADAPTER 8.1.0.0 10/2/2001
QLogic oem0.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
SCSI\DISK&VEN_QLOGIC&PROD_PSEUDO_DEVICE&
REV_\4&3904DA3D&0&07F0
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard
system devices) machine.inf Not Available
ACPI\PNP0A03\14
System Interrupt Controller Not Available Not
Available Not Available Not Available Not
Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_
00\3&19E45801&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard
system devices) machine.inf Not Available
ACPI\PNP0A03\15
QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)
No SCSIADAPTER 8.1.0.0 10/2/2001
QLogic oem0.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard
system devices) machine.inf Not Available
ACPI\PNP0A03\16
System Interrupt Controller Not Available Not
Available Not Available Not Available Not
Available Not Available Not Available
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00\3&3BCEF44&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard
system devices) machine.inf Not Available
ACPI\PNP0A03\17
QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)
No SCSIADAPTER 8.1.0.0 10/2/2001
QLogic oem0.inf Not Available
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(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
(Standard disk drives) disk.inf Not Available
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PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard
system devices) machine.inf Not Available
ACPI\PNP0A03\18
System Interrupt Controller Not Available Not
Available Not Available Not Available Not
Available Not Available Not Available
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PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard
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ACPI\PNP0A03\19
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard
system devices) machine.inf Not Available
ACPI\PNP0A03\1A
System Interrupt Controller Not Available Not
Available Not Available Not Available Not
Available Not Available Not Available
PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_
00\3&D525062&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard
system devices) machine.inf Not Available
ACPI\PNP0A03\1B
QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced)
No SCSIADAPTER 8.1.0.0 10/2/2001
QLogic oem0.inf Not Available
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&32028D8&0&011
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&32028D8&0&012
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&32028D8&0&013
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PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\1C
System Interrupt Controller Not Available Not Available Not Available Not Available Not Available Not Available PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&32C5B1AC&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\1D
QLogic QLA2200 PCI Fibre Channel Adapter (011002 enhanced) No SCSIADAPTER 8.1.0.0 10/2/2001 QLogic oem0.inf Not Available PCI\VEN_1077&DEV_2200&SUBSYS_00021077&REV_05\3&7B03F9A&0&10
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&12C4C12A&0&003
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&12C4C12A&0&010
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&12C4C12A&0&011
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&12C4C12A&0&012
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&12C4C12A&0&013
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_QLOGIC&PROD_PSEUDO_DEVICE&REV_\4&12C4C12A&0&07F0
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System Interrupt Controller Not Available Not Available Not Available Not Available Not Available Not Available PCI\VEN_1033&DEV_00FE&SUBSYS_00FE1033&REV_00\3&309158FC&0&08
PCI bus Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\1F
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Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&269EC09C&0&002
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&269EC09C&0&003
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&269EC09C&0&010
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&269EC09C&0&011
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&269EC09C&0&012
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_NEC&PROD_ISTORAGE_2000&REV_W269\4&269EC09C&0&013
Disk drive Yes DISKDRIVE 5.2.3668.0 8/6/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_QLOGIC&PROD_PSEUDO_DEVICE&REV_\4&269EC09C&0&07F0
ACPI Fixed Feature Button Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ACPI\FIXEDBUTTON\2&DABA3FF&0
Logical Disk Manager Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ROOT\DMIO\0000
Volume Manager Yes SYSTEM 5.2.3668.0 8/6/2002 (Standard system devices) machine.inf Not Available ROOT\FTDISK\0000
Generic volume Yes VOLUME 5.2.3668.0 8/6/2002 Microsoft volume.inf Not Available STORAGE\VOLUME\1&30A96598&0&SIGNATURE164074C1OFFSET7E00LENGTH31FFD57A00
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Microsoft volume.inf Not Available
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Generic volume Yes VOLUME 5.2.3668.0 8/6/2002
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Generic volume Yes VOLUME 5.2.3668.0 8/6/2002
Microsoft volume.inf Not Available
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Generic volume Yes VOLUME 5.2.3668.0 8/6/2002
Microsoft volume.inf Not Available
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Microsoft volume.inf Not Available
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Microsoft volume.inf Not Available
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Microsoft volume.inf Not Available
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Legacy Video Capture Devices Yes MEDIA 5.2.3668.0
8/6/2002 (Standard system devices) wave.inf
Not Available ROOT\MEDIA\MS_MMVCD
Video Codecs Yes MEDIA 5.2.3668.0 8/6/2002
(Standard system devices) wave.inf Not
Available ROOT\MEDIA\MS_MMVID
WAN Miniport (L2TP) Yes NET 5.2.3668.0 8/6/2002
Microsoft netrasa.inf Not Available
ROOT\MS_L2TPMINIPORT\0000
WAN Miniport (IP) Yes NET 5.2.3668.0 8/6/2002
Microsoft netrasa.inf Not Available
ROOT\MS_NDISWANIP\0000
WAN Miniport (PPPOE) Yes NET 5.2.3668.0
8/6/2002 Microsoft netrasa.inf Not Available
ROOT\MS_PPPOEMINIPORT\0000
WAN Miniport (PPTP) Yes NET 5.2.3668.0 8/6/2002
Microsoft netrasa.inf Not Available
ROOT\MS_PPTPMINIPORT\0000
Direct Parallel Yes NET 5.2.3668.0 8/6/2002
Microsoft netrasa.inf Not Available
ROOT\MS_PTIMINIPORT\0000
Terminal Server Device Redirector Yes SYSTEM 5.2.3668.0
8/6/2002 (Standard system devices) machine.inf
Not Available ROOT\RDPDR\0000
Terminal Server Keyboard Driver Yes SYSTEM 5.2.3668.0
8/6/2002 (Standard system devices) machine.inf
Not Available ROOT\RDP_KBD\0000
Terminal Server Mouse Driver Yes SYSTEM 5.2.3668.0
8/6/2002 (Standard system devices) machine.inf
Not Available ROOT\RDP_MOU\0000
Plug and Play Software Device Enumerator Yes SYSTEM
5.2.3668.0 8/6/2002 (Standard system devices)

machine.inf Not Available
ROOT\SYSTEM\0000

[Environment Variables]

Variable Value User Name
ComSpec %SystemRoot%\system32\cmd.exe
<SYSTEM>
Path
%SystemRoot%\system32;%SystemRoot%;%SystemRoo
t%\System32\Wbem;C:\Program Files\Microsoft SQL
Server\80\Tools\Binn\;C:\Program Files (x86)\Microsoft SQL
Server\80\Tools\Binn\ <SYSTEM>
windir %SystemRoot% <SYSTEM>
OS Windows_NT <SYSTEM>
PROCESSOR_ARCHITECTURE IA64 <SYSTEM>
PROCESSOR_LEVEL 31 <SYSTEM>
PROCESSOR_IDENTIFIER ia64 Family 31 Model 0 Stepping
6, GenuineIntel <SYSTEM>
PROCESSOR_REVISION 0006 <SYSTEM>
NUMBER_OF_PROCESSORS 32 <SYSTEM>
ClusterLog C:\WINDOWS\Cluster\cluster.log <SYSTEM>
PATHEXT .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH
<SYSTEM>
TEMP %SystemRoot%\TEMP <SYSTEM>
TMP %SystemRoot%\TEMP <SYSTEM>
TEMP %USERPROFILE%\Local Settings\Temp 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
ASAMA\Administrator
TMP %USERPROFILE%\Local Settings\Temp
ASAMA\Administrator

[Print Jobs]

Document Size Owner Notify Status Time
Submitted Start Time Until Time Elapsed Time Pages
Printed Job ID Priority Parameters Driver
Print Processor Host Print Queue Data Type
Name

[Network Connections]

Local Name Remote Name Type Status
User Name

[Running Tasks]

Name Path Process ID Priority Min Working Set
Max Working Set Start Time Version Size
File Date
system idle process Not Available 0 0
Not Available Not Available Not
Available Not Available Not Available Not
Available
system Not Available 4 8 0
2826240 Not Available Not Available
Not Available Not Available
smss.exe c:\windows\system32\smss.exe 444 11
409600 2826240 9/5/2002 11:21 AM 5.2.3668.0
(main.020806-1624) 128.50 KB (131,584 bytes) 8/9/2002
9:00 PM
csrss.exe Not Available 500 13 Not
Available Not Available 9/5/2002 11:25 AM Not
Available Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe
524 13 409600 2826240 9/5/2002
11:25 AM 5.2.3668.0 (main.020806-1624) 614.50 KB (629,248
bytes) 8/9/2002 9:00 PM
services.exe c:\windows\system32\services.exe 568
9 409600 2826240 9/5/2002 11:25 AM
5.2.3668.0 (main.020806-1624) 290.00 KB (296,960
bytes) 8/9/2002 9:00 PM
lsass.exe c:\windows\system32\lsass.exe 580 9
409600 2826240 9/5/2002 11:25 AM 5.2.3668.0
(main.020806-1624) 16.50 KB (16,896 bytes) 8/9/2002
9:00 PM
svchost.exe c:\windows\system32\svchost.exe 740
8 409600 2826240 9/5/2002 11:25 AM
5.2.3668.0 (main.020806-1624) 32.50 KB (33,280
bytes) 8/9/2002 9:00 PM
svchost.exe c:\windows\system32\svchost.exe 804
8 409600 2826240 9/5/2002 11:25 AM
5.2.3668.0 (main.020806-1624) 32.50 KB (33,280
bytes) 8/9/2002 9:00 PM
svchost.exe Not Available 952 8
Not Available Not Available 9/5/2002
11:25 AM Not Available Not Available Not
Available
svchost.exe Not Available 1000 8
Not Available Not Available 9/5/2002
11:25 AM Not Available Not Available Not
Available
svchost.exe c:\windows\system32\svchost.exe 1012
8 409600 2826240 9/5/2002 11:25 AM
5.2.3668.0 (main.020806-1624) 32.50 KB (33,280
bytes) 8/9/2002 9:00 PM
spoolsv.exe c:\windows\system32\spoolsv.exe 1180
8 409600 2826240 9/5/2002 11:26 AM
5.2.3668.0 (main.020806-1624) 158.00 KB (161,792
bytes) 8/9/2002 9:00 PM
msdtc.exe Not Available 1220 8 Not
Available Not Available 9/5/2002 11:26 AM Not
Available Not Available Not Available
svchost.exe c:\windows\system32\svchost.exe 1752
8 409600 2826240 9/5/2002 11:26 AM
5.2.3668.0 (main.020806-1624) 32.50 KB (33,280
bytes) 8/9/2002 9:00 PM
svchost.exe Not Available 1788 8
Not Available Not Available 9/5/2002
11:26 AM Not Available Not Available Not
Available
mssearch.exe c:\program files\common
files\system\mssearch\bin\mssearch.exe 1844 8
409600 2826240 9/5/2002 11:26 AM
9.107.7019.1 451.50 KB (462,336 bytes)
8/21/2002 9:14 PM
explorer.exe c:\windows\explorer.exe 1040
8 409600 2826240 9/5/2002 11:26 AM
6.00.3668.0 (main.020806-1624) 1.63 MB (1,709,568
bytes) 8/9/2002 9:00 PM
dfssvc.exe c:\windows\system32\dfssvc.exe 1184 8
409600 2826240 9/5/2002 11:26 AM 5.2.3668.0
(main.020806-1624) 421.00 KB (431,104 bytes) 8/9/2002
9:00 PM
idwlog.exe c:\windows\system32\idwlog.exe 2096 8
409600 2826240 9/5/2002 11:26 AM 5.2.3668.0
(main.020806-1624) 142.50 KB (145,920 bytes) 8/9/2002
9:00 PM
svchost.exe c:\windows\system32\svchost.exe 2172
8 409600 2826240 9/5/2002 11:26 AM
5.2.3668.0 (main.020806-1624) 32.50 KB (33,280
bytes) 8/9/2002 9:00 PM
wmiprvse.exe Not Available 2484 8
Not Available Not Available 9/5/2002
11:26 AM Not Available Not Available Not
Available
helpctr.exe c:\windows\pchealth\helpctr\binaries\helpctr.exe
2636 8 409600 2826240 9/5/2002
11:26 AM 5.2.3668.0 (main.020806-1624) 2.05 MB (2,146,816
bytes) 8/22/2002 12:24 PM
wmiprvse.exe Not Available 2732 8
Not Available Not Available 9/5/2002
11:26 AM Not Available Not Available Not
Available
helpsvc.exe
c:\windows\pchealth\helpctr\binaries\helpsvc.exe
2760 8 409600 2826240 9/5/2002
11:26 AM 5.2.3668.0 (main.020806-1624) 2.32 MB (2,432,000
bytes) 8/22/2002 12:24 PM
wuauclt.exe c:\windows\system32\wuauclt.exe 2928
8 409600 2826240 9/5/2002 11:27 AM
5.4.3668.0 (main.020806-1624) 281.50 KB (288,256
bytes) 8/22/2002 12:21 PM

[Loaded Modules]

Name Version Size File Date Manufacturer
Path
smss 5.2.3668.0 (main.020806-1624) 128.50 KB (131,584
bytes) 8/9/2002 9:00 PM Microsoft Corporation
c:\windows\system32\smss.exe
ntdll 5.2.3668.0 (main.020806-1624) 1.47 MB (1,542,656
bytes) 8/9/2002 9:00 PM Microsoft Corporation
c:\windows\system32\ntdll.dll
winlogon 5.2.3668.0 (main.020806-1624) 614.50 KB (629,248
bytes) 8/9/2002 9:00 PM Microsoft Corporation
c:\windows\system32\winlogon.exe
kernel32 5.2.3668.0 (main.020806-1624) 1.77 MB (1,853,952
bytes) 8/9/2002 9:00 PM Microsoft Corporation
c:\windows\system32\kernel32.dll
msvcrt 7.0.3668.0 (main.020806-1624) 874.00 KB (894,976
bytes) 8/9/2002 9:00 PM Microsoft Corporation
c:\windows\system32\msvcrt.dll
advapi32 5.2.3668.0 (main.020806-1624) 1.33 MB (1,393,664
bytes) 8/9/2002 9:00 PM Microsoft Corporation

c:\windows\system32\advapi32.dll
rpcrt4 5.2.3668.0 (main.020806-1624) 1.99 MB (2,083,328 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rpcrt4.dll
user32 5.2.3668.0 (main.020806-1624) 1.31 MB (1,378,304 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\user32.dll
gdi32 5.2.3668.0 (main.020806-1624) 799.50 KB (818,688 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\gdi32.dll
userenv 5.2.3668.0 (main.020806-1624) 1.48 MB (1,549,824 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\userenv.dll
nddeapi 5.2.3668.0 (main.020806-1624) 42.50 KB (43,520 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\nddeapi.dll
crypt32 5.131.3668.0 (main.020806-1624) 1.53 MB (1,599,488 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\crypt32.dll
msasn1 5.2.3668.0 (main.020806-1624) 154.50 KB (158,208 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msasn1.dll
secur32 5.2.3668.0 (main.020806-1624) 162.00 KB (165,888 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\secur32.dll
winsta 5.2.3668.0 (main.020806-1624) 150.00 KB (153,600 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\winsta.dll
netapi32 5.2.3668.0 (main.020806-1624) 863.50 KB (884,224 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\netapi32.dll
profmap 5.2.3668.0 (main.020806-1624) 57.00 KB (58,368 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\profmap.dll
regapi 5.2.3668.0 (main.020806-1624) 128.50 KB (131,584 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\regapi.dll
ws2_32 5.2.3668.0 (main.020806-1624) 243.00 KB (248,832 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ws2_32.dll
ws2help 5.2.3668.0 (main.020806-1624) 49.50 KB (50,688 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ws2help.dll
msgina 5.2.3668.0 (main.020806-1624) 2.02 MB (2,122,752 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msgina.dll
shsvcs 6.00.3668.0 (main.020806-1624) 323.00 KB (330,752 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\shsvcs.dll
shlwapi 6.00.3668.0 (main.020806-1624) 729.00 KB (746,496 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\shlwapi.dll
sfc 5.2.3668.0 (main.020806-1624) 7.50 KB (7,680 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\sfc.dll
sfc_os 5.2.3668.0 (main.020806-1624) 251.00 KB (257,024 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\sfc_os.dll
wintrust 5.131.3668.0 (main.020806-1624) 460.00 KB (471,040 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wintrust.dll
ole32 5.2.3668.0 (main.020806-1624) 3.62 MB (3,790,848 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ole32.dll
imagehlp 5.2.3668.0 (main.020806-1624) 129.50 KB (132,608 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\imagehlp.dll
comctl32 6.0 (main.020806-1624) 2.26 MB (2,369,024 bytes) 8/22/2002 5:10 AM Microsoft Corporation c:\windows\winsxs\ia64_microsoft.windows.common-controls_6595b64144ccf1df_6.0.100.0_x-ww_b3722bab\comctl32.dll
version 5.2.3668.0 (main.020806-1624) 44.00 KB (45,056 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\version.dll
winscard 5.2.3668.0 (main.020806-1624) 304.50 KB (311,808 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\winscard.dll
wtsapi32 5.2.3668.0 (main.020806-1624) 46.50 KB (47,616 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wtsapi32.dll
sxs 5.2.3668.0 (main.020806-1624) 1.96 MB (2,058,240 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\sxs.dll
winmm 5.2.3668.0 (main.020806-1624) 433.00 KB (443,392 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\winmm.dll
shell32 6.00.3668.0 (main.020806-1624) 12.46 MB (13,061,120 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\shell32.dll
setupapi 5.2.3668.0 (main.020806-1624) 1.79 MB (1,882,112 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\setupapi.dll
wldap32 5.2.3668.0 (main.020806-1624) 387.00 KB (396,288 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wldap32.dll
cscdll 5.2.3668.0 (main.020806-1624) 217.00 KB (222,208 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\cscdll.dll
wlnotify 5.2.3668.0 (main.020806-1624) 228.00 KB (233,472 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wlnotify.dll
winspool 5.2.3668.0 (main.020806-1624) 423.00 KB (433,152 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\winspool.drv
mpr 5.2.3668.0 (main.020806-1624) 161.00 KB (164,864 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\mpr.dll
comctl32 5.82 (main.020806-1624) 1.55 MB (1,623,040 bytes) 8/22/2002 5:10 AM Microsoft Corporation c:\windows\winsxs\ia64_microsoft.windows.common-controls_6595b64144ccf1df_5.82.0.0_x-ww_b9c4a0a5\comctl32.dll
uxtheme 6.00.3668.0 (main.020806-1624) 545.00 KB (558,080 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\uxtheme.dll
samlib 5.2.3668.0 (main.020806-1624) 107.00 KB (109,568 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\samlib.dll
cscui 5.2.3668.0 (main.020806-1624) 625.00 KB (640,000 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\cscui.dll
ntmarta 5.2.3668.0 (main.020806-1624) 342.00 KB (350,208 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntmarta.dll
oleaut32 5.2.3668.0 3.55 MB (3,726,336 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\oleaut32.dll
clbcatq 2001.12.4598.0 (main.020806-1624) 1.36 MB (1,428,480 bytes) 8/22/2002 12:21 PM Microsoft Corporation c:\windows\system32\clbcatq.dll
comres 2001.12.4598.0 (main.020806-1624) 779.50 KB (798,208 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\comres.dll
services 5.2.3668.0 (main.020806-1624) 290.00 KB (296,960 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\services.exe
scesrv 5.2.3668.0 (main.020806-1624) 779.00 KB (797,696 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\scesrv.dll
authz 5.2.3668.0 (main.020806-1624) 193.50 KB (198,144 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\authz.dll
umpnpmgr 5.2.3668.0 (main.020806-1624) 321.00 KB (328,704 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\umpnpmgr.dll
ncobjapi 5.2.3668.0 (main.020806-1624) 119.00 KB (121,856 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ncobjapi.dll
msvcp60 6.10.2197.8 941.50 KB (964,096 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msvcp60.dll
eventlog 5.2.3668.0 (main.020806-1624) 158.00 KB (161,792 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\eventlog.dll
psapi 5.2.3668.0 (main.020806-1624) 48.00 KB (49,152 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\psapi.dll
lsass 5.2.3668.0 (main.020806-1624) 16.50 KB (16,896 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\lsass.exe
lsasrv 5.2.3668.0 (main.020806-1624) 1.91 MB (2,002,432 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\lsasrv.dll
samsrv 5.2.3668.0 (main.020806-1624) 1.00 MB (1,050,624 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\samsrv.dll
cryptdll 5.2.3668.0 (main.020806-1624) 61.00 KB (62,464 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\cryptdll.dll
dnsapi 5.2.3668.0 (main.020806-1624) 398.00 KB (407,552 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\dnsapi.dll
ntdsapi 5.2.3668.0 (main.020806-1624) 183.50 KB (187,904 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntdsapi.dll
msprivs 5.2.3668.0 (main.020806-1624) 43.50 KB (44,544 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msprivs.dll
kerberos 5.2.3668.0 (main.020806-1624) 853.50 KB (873,984 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\kerberos.dll
msv1_0 5.2.3668.0 (main.020806-1624) 318.50 KB (326,144 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msv1_0.dll
netlogon 5.2.3668.0 (main.020806-1624) 958.50 KB (981,504 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\netlogon.dll
w32time 5.2.3668.0 (main.020806-1624) 544.50 KB (557,568

bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\w32time.dll
iphlpapi 5.2.3668.0 (main.020806-1624) 226.00 KB (231,424 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\iphlpapi.dll
schannel 5.2.3668.0 (main.020806-1624) 459.50 KB (470,528 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\schannel.dll
wdigest 5.2.3668.0 (main.020806-1624) 161.50 KB (165,376 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wdigest.dll
rsaenh 5.2.3668.0 (main.020806-1624) 374.07 KB (383,048 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rsaenh.dll
rassfm 5.2.3668.0 (main.020806-1624) 56.50 KB (57,856 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rassfm.dll
kdcsvc 5.2.3668.0 (main.020806-1624) 564.00 KB (577,536 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\kdcsvc.dll
ntdsa 5.2.3668.0 (main.020806-1624) 3.56 MB (3,736,576 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntdsa.dll
ntdsatq 5.2.3668.0 (main.020806-1624) 80.50 KB (82,432 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntdsatq.dll
mswsock 5.2.3668.0 (main.020806-1624) 738.00 KB (755,712 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\mswsock.dll
esent 5.2.3668.0 (main.020806-1624) 2.44 MB (2,560,000 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\esent.dll
scecli 5.2.3668.0 (main.020806-1624) 466.50 KB (477,696 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\scecli.dll
wshtcpip 5.2.3668.0 (main.020806-1624) 39.00 KB (39,936 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wshtcpip.dll
ipsecsvc 5.2.3668.0 (main.020806-1624) 445.00 KB (455,680 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ipsecsvc.dll
oakley 5.2.3668.0 (main.020806-1624) 514.50 KB (526,848 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\oakley.dll
winipsec 5.2.3668.0 (main.020806-1624) 78.00 KB (79,872 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\winipsec.dll
pstorsvc 5.2.3668.0 (main.020806-1624) 58.50 KB (59,904 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\pstorsvc.dll
psbase 5.2.3668.0 (main.020806-1624) 174.50 KB (178,688 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\psbase.dll
dssenh 5.2.3668.0 (main.020806-1624) 325.07 KB (332,872 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\dssenh.dll
wlbsctrl 5.2.3668.0 (main.020806-1624) 192.00 KB (196,608 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wlbsctrl.dll
svchost 5.2.3668.0 (main.020806-1624) 32.50 KB (33,280 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\svchost.exe
rpcss 5.2.3668.0 (main.020806-1624) 696.00 KB (712,704 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rpcss.dll
termsrv 5.2.3668.0 (main.020806-1624) 622.50 KB (637,440 bytes) 8/22/2002 12:21 PM Microsoft Corporation c:\windows\system32\termsrv.dll
icaapi 5.2.3668.0 (main.020806-1624) 26.50 KB (27,136 bytes) 8/22/2002 12:21 PM Microsoft Corporation c:\windows\system32\icaapi.dll
mstlsapi 5.2.3668.0 (main.020806-1624) 316.50 KB (324,096 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\mstlsapi.dll
activeds 5.2.3668.0 (main.020806-1624) 558.50 KB (571,904 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\activeds.dll
adsldpc 5.2.3668.0 (main.020806-1624) 317.50 KB (325,120 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\adsldpc.dll
credui 5.2.3668.0 (main.020806-1624) 290.00 KB (296,960 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\credui.dll
atl 3.00.2197 346.00 KB (354,304 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\atl.dll
rdpwsx 5.2.3668.0 (main.020806-1624) 262.13 KB (268,424 bytes) 8/22/2002 12:21 PM Microsoft Corporation c:\windows\system32\rdpwsx.dll
wzcsvc 5.2.3668.0 (main.020806-1624) 610.00 KB (624,640 bytes) 8/8/2002 11:17 PM Microsoft Corporation c:\windows\system32\wzcsvc.dll
rtutils 5.2.3668.0 (main.020806-1624) 83.00 KB (84,992 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rtutils.dll
wmi 5.2.3668.0 (main.020806-1624) 5.00 KB (5,120 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wmi.dll
dhcpcsvc 5.2.3668.0 (main.020806-1624) 282.00 KB (288,768 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\dhcpcsvc.dll
rastls 5.2.3668.0 (main.020806-1624) 330.00 KB (337,920 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rastls.dll
cryptui 5.131.3668.0 (main.020806-1624) 1.06 MB (1,108,992 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\cryptui.dll
mprapi 5.2.3668.0 (main.020806-1624) 259.00 KB (265,216 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\mprapi.dll
rasapi32 5.2.3668.0 (main.020806-1624) 628.00 KB (643,072 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rasapi32.dll
rasman 5.2.3668.0 (main.020806-1624) 165.50 KB (169,472 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rasman.dll
tapi32 5.2.3668.0 (main.020806-1624) 518.50 KB (530,944 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\tapi32.dll
raschap 5.2.3668.0 (main.020806-1624) 202.00 KB (206,848 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\raschap.dll
schedsvc 5.2.3668.0 (main.020806-1624) 524.50 KB (537,088 bytes) 8/22/2002 12:24 PM Microsoft Corporation c:\windows\system32\schedsvc.dll
msidle 6.00.3668.0 (main.020806-1624) 9.00 KB (9,216 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msidle.dll
wkssvc 5.2.3668.0 (main.020806-1624) 305.50 KB (312,832 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wkssvc.dll
wiarpc 5.2.3668.0 (main.020806-1624) 68.00 KB (69,632 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wiarpc.dll
cryptsvc 5.2.3668.0 (main.020806-1624) 132.50 KB (135,680 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\cryptsvc.dll
certcli 5.2.3668.0 (main.020806-1624) 590.00 KB (604,160 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\certcli.dll
vssapi 5.2.3668.0 (main.020806-1624) 1.20 MB (1,256,448 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\vssapi.dll
dmserver 5.2.3668.0 (main.020806-1624) 43.50 KB (44,544 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\dmserver.dll
es 2001.12.4598.0 (main.020806-1624) 663.00 KB (678,912 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\es.dll
pchsvc 5.2.3668.0 (main.020806-1624) 103.50 KB (105,984 bytes) 8/22/2002 12:24 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\pchsvc.dll
srvsvc 5.2.3668.0 (main.020806-1624) 189.00 KB (193,536 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\srvsvc.dll
seclogon 5.2.3668.0 (main.020806-1624) 41.00 KB (41,984 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\seclogon.dll
trkwks 5.2.3668.0 (main.020806-1624) 249.50 KB (255,488 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\trkwks.dll
wmisvc 5.2.3668.0 (main.020806-1624) 345.50 KB (353,792 bytes) 8/22/2002 12:21 PM Microsoft Corporation c:\windows\system32\wbem\wmisvc.dll
wbemcomn 5.2.3668.0 (main.020806-1624) 607.00 KB (621,568 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wbem\wbemcomn.dll
wuauserv 5.4.3668.0 (main.020806-1624) 19.00 KB (19,456 bytes) 8/22/2002 12:21 PM Microsoft Corporation c:\windows\system32\wuauserv.dll
wuaueng 5.4.3668.0 (main.020806-1624) 493.00 KB (504,832 bytes) 8/22/2002 12:21 PM Microsoft Corporation c:\windows\system32\wuaueng.dll
advpack 6.00.3668.0 (main.020806-1624) 240.00 KB (245,760 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\advpack.dll
wininet 6.00.3668.0 (main.020806-1624) 1.55 MB (1,625,088 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wininet.dll
comsvcs 2001.12.4598.0 (main.020806-1624) 3.07 MB (3,224,064 bytes) 8/22/2002 12:21 PM Microsoft Corporation c:\windows\system32\comsvcs.dll
sens 5.2.3668.0 (main.020806-1624) 91.50 KB (93,696 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\sens.dll
browser 5.2.3668.0 (main.020806-1624) 156.50 KB (160,256 bytes) 8/9/2002 9:00 PM Microsoft Corporation

c:\windows\system32\browser.dll
netrap 5.2.3668.0 (main.020806-1624) 30.50 KB (31,232 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\netrap.dll
actxprxy 6.00.3668.0 (main.020806-1624) 245.00 KB (250,880 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\actxprxy.dll
netman 5.2.3668.0 (main.020806-1624) 473.00 KB (484,352 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\netman.dll
wzcsapi 5.2.3668.0 (main.020806-1624) 49.00 KB (50,176 bytes) 8/7/2002 7:43 AM Microsoft Corporation c:\windows\system32\wzcsapi.dll
netshell 5.2.3668.0 (main.020806-1624) 2.55 MB (2,675,712 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\netshell.dll
clusapi 5.2.3668.0 (main.020806-1624) 167.50 KB (171,520 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\clusapi.dll
netcfgx 5.2.3668.0 (main.020806-1624) 1.72 MB (1,801,216 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\netcfgx.dll
hnetcfg 5.2.3668.0 (main.020806-1624) 762.50 KB (780,800 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\hnetcfg.dll
wbemprox 5.2.3668.0 (main.020806-1624) 45.50 KB (46,592 bytes) 8/22/2002 12:20 PM Microsoft Corporation c:\windows\system32\wbem\wbemprox.dll
wbemcore 5.2.3668.0 (main.020806-1624) 1.63 MB (1,711,104 bytes) 8/22/2002 12:20 PM Microsoft Corporation c:\windows\system32\wbem\wbemcore.dll
esscli 5.2.3668.0 (main.020806-1624) 913.00 KB (934,912 bytes) 8/22/2002 12:20 PM Microsoft Corporation c:\windows\system32\wbem\esscli.dll
fastprox 5.2.3668.0 (main.020806-1624) 1.50 MB (1,569,280 bytes) 8/22/2002 12:20 PM Microsoft Corporation c:\windows\system32\wbem\fastprox.dll
wbemsvc 5.2.3668.0 (main.020806-1624) 62.50 KB (64,000 bytes) 8/22/2002 12:20 PM Microsoft Corporation c:\windows\system32\wbem\wbemsvc.dll
wmiutils 5.2.3668.0 (main.020806-1624) 278.50 KB (285,184 bytes) 8/22/2002 12:21 PM Microsoft Corporation c:\windows\system32\wbem\wmiutils.dll
repdrvfs 5.2.3668.0 (main.020806-1624) 528.00 KB (540,672 bytes) 8/22/2002 12:20 PM Microsoft Corporation c:\windows\system32\wbem\repdrvfs.dll
rasmans 5.2.3668.0 (main.020806-1624) 450.00 KB (460,800 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rasmans.dll
wmiprvsd 5.2.3668.0 (main.020806-1624) 1.38 MB (1,444,352 bytes) 8/22/2002 12:20 PM Microsoft Corporation c:\windows\system32\wbem\wmiprvsd.dll
wbemess 5.2.3668.0 (main.020806-1624) 972.00 KB (995,328 bytes) 8/22/2002 12:20 PM Microsoft Corporation c:\windows\system32\wbem\wbemess.dll
rastapi 5.2.3668.0 (main.020806-1624) 132.00 KB (135,168 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rastapi.dll
rasppp 5.2.3668.0 (main.020806-1624) 519.50 KB (531,968 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rasppp.dll
ntlsapi 5.2.3668.0 (main.020806-1624) 14.00 KB (14,336 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntlsapi.dll
ipbootp 5.2.3668.0 (main.020806-1624) 72.50 KB (74,240 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ipbootp.dll
ncprov 5.2.3668.0 (main.020806-1624) 135.00 KB (138,240 bytes) 8/22/2002 12:20 PM Microsoft Corporation c:\windows\system32\wbem\ncprov.dll
rasdlg 5.2.3668.0 (main.020806-1624) 1.36 MB (1,423,360 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rasdlg.dll
rasadhlp 5.2.3668.0 (main.020806-1624) 13.00 KB (13,312 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\rasadhlp.dll
winhttp 5.2.3668.0 (main.020806-1624) 875.50 KB (896,512 bytes) 8/22/2002 5:10 AM Microsoft Corporation c:\windows\winsxs\ia64_microsoft.windows.winhttp_6595b64144ccf1df_5.1.0.0_x-ww_0fbfffd6\winhttp.dll
spoolsv 5.2.3668.0 (main.020806-1624) 158.00 KB (161,792 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\spoolsv.exe
spoolss 5.2.3668.0 (main.020806-1624) 232.00 KB (237,568 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\spoolss.dll
localspl 5.2.3668.0 (main.020806-1624) 851.50 KB (871,936 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\localspl.dll
cnbjmon 5.2.3631.0 (Lab03_dev(skatari).020509-1043) 99.50 KB (101,888 bytes) 8/7/2002 7:40 AM Microsoft Corporation c:\windows\system32\cnbjmon.dll
pjlmon 5.2.3668.0 (main.020806-1624) 39.50 KB (40,448 bytes) 8/7/2002 7:42 AM Microsoft Corporation c:\windows\system32\pjlmon.dll
tcpmon 5.2.3668.0 (main.020806-1624) 140.00 KB (143,360 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\tcpmon.dll
usbmon 5.2.3668.0 (main.020806-1624) 47.50 KB (48,640 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\usbmon.dll
winrnr 5.2.3668.0 (main.020806-1624) 39.50 KB (40,448 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\winrnr.dll
win32spl 5.2.3668.0 (main.020806-1624) 267.00 KB (273,408 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\win32spl.dll
inetpp 5.2.3668.0 (main.020806-1624) 221.00 KB (226,304 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\inetpp.dll
icmp 5.2.3668.0 (main.020806-1624) 2.50 KB (2,560 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\icmp.dll
ersvc 5.2.3668.0 (main.020806-1624) 59.00 KB (60,416 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ersvc.dll
mssearch 9.107.7019.1 451.50 KB (462,336 bytes) 8/21/2002 9:14 PM Microsoft Corporation c:\program files\common files\system\mssearch\bin\mssearch.exe
mssws 9.107.7019.1 27.50 KB (28,160 bytes) 8/21/2002 9:14 PM Microsoft Corporation c:\program files\common files\system\mssearch\bin\mssws.dll
mssrch 9.107.7019.1 6.47 MB (6,787,584 bytes) 8/21/2002 9:14 PM Microsoft Corporation c:\progra~1\common~1\system\mssearch\bin\mssrch.dll
security 5.2.3668.0 (main.020806-1624) 6.50 KB (6,656 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\security.dll
tquery 9.107.7019.1 5.53 MB (5,798,912 bytes) 8/21/2002 9:14 PM Microsoft Corporation c:\program files\common files\system\mssearch\bin\tquery.dll
propdefs 9.107.7019.1 887.50 KB (908,800 bytes) 8/21/2002 9:14 PM Microsoft Corporation c:\progra~1\common~1\system\mssearch\bin\propdefs.dll
srchidx 9.107.7019.1 2.24 MB (2,353,664 bytes) 8/21/2002 9:14 PM Microsoft Corporation c:\progra~1\common~1\system\mssearch\bin\srchidx.dll
iprop 5.2.3668.0 (main.020806-1624) 3.00 KB (3,072 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\iprop.dll
explorer 6.00.3668.0 (main.020806-1624) 1.63 MB (1,709,568 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\explorer.exe
browseui 6.00.3668.0 (main.020806-1624) 2.54 MB (2,659,840 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\browseui.dll
shdocvw 6.00.3668.0 (main.020806-1624) 3.24 MB (3,400,192 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\shdocvw.dll
apphelp 5.2.3668.0 (main.020806-1624) 269.50 KB (275,968 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\apphelp.dll
themeui 6.00.3668.0 (main.020806-1624) 826.50 KB (846,336 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\themeui.dll
msimg32 5.2.3668.0 (main.020806-1624) 7.00 KB (7,168 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msimg32.dll
linkinfo 5.2.3668.0 (main.020806-1624) 43.50 KB (44,544 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\linkinfo.dll
ntshrui 6.00.3668.0 (main.020806-1624) 236.50 KB (242,176 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntshrui.dll
urlmon 6.00.3668.0 (main.020806-1624) 1.24 MB (1,304,576 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\urlmon.dll
webcheck 6.00.3668.0 (main.020806-1624) 676.00 KB (692,224 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\webcheck.dll
wsock32 5.2.3668.0 (main.020806-1624) 23.00 KB (23,552 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\wsock32.dll
stobject 5.2.3668.0 (main.020806-1624) 179.00 KB (183,296 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\stobject.dll
batmeter 6.00.3668.0 (main.020806-1624) 59.00 KB (60,416 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\batmeter.dll
powrprof 6.00.3668.0 (main.020806-1624) 38.00 KB (38,912 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\powrprof.dll
printui 5.2.3668.0 (main.020806-1624) 1.12 MB (1,170,432 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\printui.dll
cfgmgr32 5.2.3668.0 (main.020806-1624) 15.50 KB (15,872

bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\cfgmgr32.dll
drprov 5.2.3668.0 (main.020806-1624) 27.00 KB (27,648 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\drprov.dll
ntlanman 5.2.3668.0 (main.020806-1624) 108.00 KB (110,592 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntlanman.dll
netui0 5.2.3668.0 (main.020806-1624) 181.50 KB (185,856 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\netui0.dll
netui1 5.2.3668.0 (main.020806-1624) 481.50 KB (493,056 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\netui1.dll
davclnt 5.2.3668.0 (main.020806-1624) 61.00 KB (62,464 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\davclnt.dll
dfssvc 5.2.3668.0 (main.020806-1624) 421.00 KB (431,104 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\dfssvc.exe
resutils 5.2.3668.0 (main.020806-1624) 152.00 KB (155,648 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\resutils.dll
idwlog 5.2.3668.0 (main.020806-1624) 142.50 KB (145,920 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\idwlog.exe
tapisrv 5.2.3668.0 (main.020806-1624) 657.50 KB (673,280 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\tapisrv.dll
unimdm 5.2.3668.0 (main.020806-1624) 417.50 KB (427,520 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\unimdm.tsp
uniplat 5.2.3668.0 (main.020806-1624) 35.50 KB (36,352 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\uniplat.dll
kmddsp 5.2.3668.0 (main.020806-1624) 83.00 KB (84,992 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\kmddsp.tsp
ndptsp 5.2.3668.0 (main.020806-1624) 128.00 KB (131,072 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ndptsp.tsp
ipconf 5.2.3668.0 (main.020806-1624) 40.50 KB (41,472 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\ipconf.tsp
h323 5.2.3668.0 (main.020806-1624) 795.50 KB (814,592 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\h323.tsp
hidphone 5.2.3668.0 (main.020806-1624) 87.00 KB (89,088 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\hidphone.tsp
hid 5.2.3668.0 (main.020806-1624) 45.00 KB (46,080 bytes) 8/8/2002 11:14 PM Microsoft Corporation c:\windows\system32\hid.dll
helpctr 5.2.3668.0 (main.020806-1624) 2.05 MB (2,146,816 bytes) 8/22/2002 12:24 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\helpctr.exe
hcappres 5.2.3668.0 (main.020806-1624) 6.00 KB (6,144 bytes) 8/22/2002 12:24 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\hcappres.dll
itss 5.2.3668.0 (main.020806-1624) 349.00 KB (357,376 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\itss.dll
msxml3 8.40.8806.0 3.41 MB (3,573,760 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msxml3.dll
pchshell 5.2.3668.0 (main.020806-1624) 287.50 KB (294,400 bytes) 8/22/2002 12:24 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\pchshell.dll
mlang 6.00.3668.0 (main.020806-1624) 805.50 KB (824,832 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\mlang.dll
mshtml 6.00.3668.0 (main.020806-1624) 8.11 MB (8,503,808 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\mshtml.dll
msimtf 5.2.3668.0 (main.020806-1624) 522.50 KB (535,040 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msimtf.dll
msctf 5.2.3668.0 (main.020806-1624) 939.50 KB (962,048 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msctf.dll
shdoclc 6.00.3668.0 (main.020806-1624) 520.50 KB (532,992 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\shdoclc.dll
jscript 5.6.0.7909 1.22 MB (1,275,392 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\jscript.dll
msls31 3.10.349.0 442.00 KB (452,608 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\msls31.dll
imm32 5.2.3668.0 (main.020806-1624) 313.50 KB (321,024 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\imm32.dll
mshtmled 6.00.3668.0 (main.020806-1624) 1.37 MB (1,435,136 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\mshtmled.dll
vbscript 5.6.0.7909 1.08 MB (1,127,936 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\vbscript.dll
msinfo 5.2.3668.0 (main.020806-1624) 1.20 MB (1,255,424 bytes) 8/22/2002 12:24 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\msinfo.dll
mfc42u 6.00.2197.0 3.34 MB (3,506,176 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\mfc42u.dll
comdlg32 6.00.3668.0 (main.020806-1624) 712.50 KB (729,600 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\comdlg32.dll
riched32 5.2.3668.0 (main.020806-1624) 5.00 KB (5,120 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\riched32.dll
riched20 5.31.23.1217 1.26 MB (1,318,400 bytes) 8/9/2002 9:00 PM Microsoft Corporation c:\windows\system32\riched20.dll
helpsvc 5.2.3668.0 (main.020806-1624) 2.32 MB (2,432,000 bytes) 8/22/2002 12:24 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\helpsvc.exe
wuauclt 5.4.3668.0 (main.020806-1624) 281.50 KB (288,256 bytes) 8/22/2002 12:21 PM Microsoft Corporation c:\windows\system32\wuauclt.exe

[Services]

Display Name Name State Start Mode Service Type Path Error Control Start Name Tag ID
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
Windows Audio AudioSrv Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Background Intelligent Transfer Service BITS Stopped Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Computer Browser Browser Running Auto Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Indexing Service CiSvc Stopped Manual Share Process c:\windows\system32\cisvc.exe Normal LocalSystem 0
ClipBook ClipSrv Stopped Disabled Own Process c:\windows\system32\clipsrv.exe Normal LocalSystem 0
COM+ System Application COMSysApp Stopped Manual Own Process c:\windows\system32\dllhost.exe /processid:{02d4b3f1-fd88-11d1-960d-00805fc79235} Normal LocalSystem 0
Cryptographic Services CryptSvc Running Auto Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Distributed File System Dfs Running Auto 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 Manual 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 Stopped Manual Share Process
        c:\windows\system32\lsass.exe Normal
        LocalSystem 0
IAS Jet Database Access IASJet Stopped Manual
        Share Process c:\windows\syswow64\svchost.exe
-k iasjet Normal LocalSystem 0
IMAPI CD-Burning COM Service ImapiService Stopped
        Disabled Own Process
        "c:\windows\system32\imapi.exe" Normal
        LocalSystem 0
Intersite Messaging IsmServ Stopped Disabled Own
Process c:\windows\system32\ismserv.exe Normal
        LocalSystem 0
Kerberos Key Distribution Center kdc Stopped Disabled
        Share Process c:\windows\system32\lsass.exe
        Normal LocalSystem 0
Server lanmanserver Running Auto Share
Process c:\windows\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Workstation lanmanworkstation Running Auto
        Share Process c:\windows\system32\svchost.exe
-k netsvcs Normal LocalSystem 0
License Logging LicenseService Stopped Disabled
        Own Process c:\windows\system32\llssrv.exe
        Normal NT AUTHORITY\NetworkService 0
TCP/IP NetBIOS Helper LmHosts Running Auto
        Share Process c:\windows\system32\svchost.exe
-k localservice Normal NT AUTHORITY\LocalService
        0
Messenger Messenger Stopped Disabled Share Process
        c:\windows\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Distributed Transaction Coordinator MSDTC Running
        Auto Own Process
        c:\windows\system32\msdtc.exe Normal NT
AUTHORITY\NetworkService 0
Windows Installer MSIServer Stopped Manual Share
Process c:\windows\system32\msiexec.exe /v Normal
        LocalSystem 0
Microsoft Search MSSEARCH Running Auto
        Share Process "c:\program files\common
files\system\mssearch\bin\mssearch.exe" Normal
        LocalSystem 0
MSSQLSERVER MSSQLSERVER Stopped Manual
        Own Process c:\program files\microsoft sql
server\mssql\binn\sqlservr.exe -smssqlserver Normal
        LocalSystem 0
MSSQLServerADHelper MSSQLServerADHelper
        Stopped Manual Own Process c:\program
files\microsoft sql server\80\tools\binn\sqladhlp.exe Normal
        LocalSystem 0
MSSQLServerOLAPService MSSQLServerOLAPService
        Stopped Manual Own Process c:\program
files\microsoft analysis services\bin\msmdsrv.exe 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 Running 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 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 Running
        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 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 -k
rpcss Normal LocalSystem 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
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
SQLSERVERAGENT SQLSERVERAGENT Stopped Manual
        Own Process c:\program files\microsoft sql
server\mssql\binn\sqlagent.exe -i mssqlserver 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 Running Manual Share Process
        c:\windows\system32\svchost.exe -k tapisrv Normal
        LocalSystem 0
Terminal Services TermService Running Auto
        Share Process c:\windows\system32\svchost.exe
-k termsvcs Normal LocalSystem 0
Telnet TlntSvr Stopped Disabled Own Process
        c:\windows\system32\tlntsvr.exe Normal NT
AUTHORITY\LOCAL SERVICE 0
Distributed Link Tracking Server TrkSvr Stopped Disabled
        Share Process c:\windows\system32\svchost.exe
-k netsvcs Normal LocalSystem 0
Distributed Link Tracking Client TrkWks Running Auto
        Share Process c:\windows\system32\svchost.exe
-k netsvcs Normal LocalSystem 0
Terminal Services Session Directory Tssdis Stopped
        Disabled Own Process
        c:\windows\system32\tssdis.exe Normal
        LocalSystem 0
Upload Manager uploadmgr Stopped Disabled 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 LocalSystem 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 netsvcs 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
Windows Management Instrumentation Driver Extensions Wmi
Stopped Manual Share Process
c:\windows\system32\svchost.exe -k netsvcs Normal
LocalSystem 0
WMI Performance Adapter WmiApSrv Stopped Manual
Own Process
c:\windows\system32\wbem\wmiapsrv.exe Normal
LocalSystem 0
Automatic Updates wuauserv 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

[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 SQL Server All Users:Microsoft SQL Server 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 ASAMA\Administrator:Accessories
ASAMA\Administrator
Accessories\Accessibility
ASAMA\Administrator:Accessories\Accessibility
ASAMA\Administrator
Accessories\Entertainment
ASAMA\Administrator:Accessories\Entertainment
ASAMA\Administrator
Startup ASAMA\Administrator:Startup ASAMA\Administrator

[Startup Programs]

Program Command User Name Location
desktop desktop.ini NT AUTHORITY\SYSTEM Startup
desktop desktop.ini ASAMA\Administrator Startup
desktop desktop.ini .DEFAULT Startup
desktop desktop.ini All Users Common Startup
IDW Logging Tool c:\windows\system32\idwlog.exe -3
All Users Common Startup

[OLE Registration]

Object Local Server
Sound (OLE2) sndrec32.exe
Media Clip mplay32.exe
Video Clip mplay32.exe /avi
MIDI Sequence mplay32.exe /mid
Sound Not Available
Media Clip Not Available
WordPad Document "%programfiles%\windows
nt\accessories\wordpad.exe"
Bitmap Image mspaint.exe

[Windows Error Reporting]

Time Type Details
8/29/2002 10:00 PM Application Hang Hanging application
mshta.exe, version 6.0.3668.0, hang module kernel32.dll, version
5.2.3668.0, hang address 0x0000000000098fe0.

8/29/2002 8:20 PM Application Hang Hanging application
mmc.exe, version 5.2.3668.0, hang module kernel32.dll, version
5.2.3668.0, hang address 0x0000000000098fe0.

8/29/2002 3:29 AM Application Hang Hanging application
mmc.exe, version 5.2.3668.0, hang module kernel32.dll, version
5.2.3668.0, hang address 0x0000000000098fe0.

8/28/2002 9:15 PM Application Hang Hanging application
mmc.exe, version 5.2.3668.0, hang module perfdisk.dll, version
5.2.3668.0, hang address 0x0000000000007c40.

8/28/2002 5:46 PM Application Hang Hanging application
explorer.exe, version 6.0.3668.0, hang module kernel32.dll, version
5.2.3668.0, hang address 0x00000000000997e0.

8/28/2002 5:21 PM Application Hang Hanging application
mmc.exe, version 5.2.3668.0, hang module kernel32.dll, version
5.2.3668.0, hang address 0x0000000000098fe0.

8/28/2002 5:08 PM Application Hang Hanging application
mshta.exe, version 6.0.3668.0, hang module kernel32.dll, version
5.2.3668.0, hang address 0x0000000000098fe0.

8/24/2002 5:14 PM Application Hang Hanging application
mshta.exe, version 6.0.3668.0, hang module kernel32.dll, version
5.2.3668.0, hang address 0x0000000000098fe0.

[Internet Settings]

[Internet Explorer]

[Following are sub-categories of this main category]
[Summary]

Item Value
Version 6.0.3668.0
Build 63668
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 6.0.3668.0 245 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Microsoft Corporation
advpack.dll 6.0.3668.0 240 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Microsoft Corporation
asctrls.ocx 6.0.3668.0 219 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Microsoft Corporation
browselc.dll 6.0.3668.0 61 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Microsoft Corporation
browseui.dll 6.0.3668.0 2,598 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Microsoft Corporation
cdfview.dll 6.0.3668.0 298 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Microsoft Corporation
comctl32.dll 5.82.3668.0 1,585 KB 8/9/2002
9:00:00 PM C:\WINDOWS\system32 Microsoft
Corporation
dxtrans.dll 6.3.3668.0 573 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Microsoft Corporation
dxtmsft.dll 6.3.3668.0 962 KB 8/9/2002 9:00:00 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 16.0.3668.0 664 KB 8/9/2002
9:00:00 PM C:\WINDOWS\system32 Microsoft
Corporation
iepeers.dll 6.0.3668.0 660 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Microsoft Corporation
iesetup.dll 6.0.3668.0 83 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Microsoft Corporation
ieuinit.inf Not Available 19 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Not Available
iexplore.exe 6.0.3668.0 102 KB 8/9/2002 9:00:00 PM
C:\Program Files\Internet Explorer Microsoft Corporation
imgutil.dll 6.0.3668.0 90 KB 8/9/2002 9:00:00 PM
C:\WINDOWS\system32 Microsoft Corporation

```
inetcpl.cpl  6.0.3668.0 579 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
inetcplc.dll 6.0.3668.0 108 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
inseng.dll   6.0.3668.0 212 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
mlang.dll    6.0.3668.0 806 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
msencode.dll             <File Missing>          Not Available
             Not Available          Not Available          Not
Available
mshta.exe    6.0.3668.0 59 KB       8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
mshtml.dll   6.0.3668.0 8,305 KB    8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
mshtml.tlb   6.0.3668.0 1,319 KB    8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
mshtmled.dll             6.0.3668.0 1,402 KB    8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
mshtmler.dll             6.0.3668.0 56 KB       8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
msident.dll  6.0.3668.0 129 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
msidntld.dll 6.0.3668.0 14 KB       8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
msieftp.dll  6.0.3668.0 541 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
msrating.dll             6.0.3668.0 381 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
mstime.dll   6.0.3668.0 1,653 KB    8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
occache.dll  6.0.3668.0 201 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
proctexe.ocx             <File Missing>          Not Available
             Not Available          Not Available          Not
Available
sendmail.dll             6.0.3668.0 103 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
shdoclc.dll  6.0.3668.0 521 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
shdocvw.dll              6.0.3668.0 3,321 KB    8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
shfolder.dll 6.0.3668.0 40 KB       8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
shlwapi.dll  6.0.3668.0 729 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
tdc.ocx      1.3.0.3130 177 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
url.dll      6.0.3668.0 48 KB       8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
urlmon.dll   6.0.3668.0 1,274 KB    8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
webcheck.dll             6.0.3668.0 676 KB      8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation
wininet.dll  6.0.3668.0 1,587 KB    8/9/2002 9:00:00 PM
             C:\WINDOWS\system32            Microsoft Corporation

[Connectivity]

Item         Value
Connection PreferenceNever dial

LAN Settings

AutoConfigProxy         wininet.dll
AutoProxyDetectMode Disabled
AutoConfigURL
Proxy        Disabled
ProxyServer
ProxyOverride

[Cache]

[ Following are sub-categories of this main category ]
[Summary]

Item         Value
Page Refresh Type       Automatic
Temporary Internet Files Folder     C:\Documents and
Settings\Administrator\Local Settings\Temporary Internet Files
Total Disk Space        Not Available
Available Disk Space    Not Available
Maximum Cache Size  Not Available
Available Cache Size    Not Available

[List of Objects]

Program File            Status       CodeBase
No cached object information available

[Content]

[ Following are sub-categories of this main category ]
[Summary]

Item         Value
Content Advisor         Disabled

[Personal Certificates]

Issued To  Issued By  Validity      Signature Algorithm
No personal certificate information available


[Other People Certificates]

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


[Publishers]

Name
No publisher information available

[Security]

Zone         Security Level
My Computer             Custom
Local intranet          Custom
Trusted sites           Custom
Internet     Custom
Restricted sites        Custom
```

<Client Configuration>

COM+ Application Configuration

COM+ Settings (properties of component TPCC.ALLTxns) for each 32 frontends

Transactions: not supported

Enable object pooling
- Minimum pool size: 22
- Maximum pool size: 22
- Creation timeout (ms): 1200000

Enable object construction
- Constructor string: "dummy string (do not remove)"

Enable just in time activation
Component supports events and statistics

Concurrency: required

TPCC Application Registry

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\TPCC]
"Path"="C:\\Inetpub\\wwwroot\\"
"NumberOfDeliveryThreads"=dword:00000004
"MaxConnections"=dword:00002ee0
"MaxPendingDeliveries"=dword:000007d0
"DB_Protocol"="DBLIB"
"TxnMonitor"="COM"
"DbServer"="asama"
"DbName"="tpcc"
"DbUser"="sa"
"DbPassword"=""
"COM_SinglePool"="YES"
```

InetInfo Registry

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Inet
Info]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Inet
Info\Parameters]
"ListenBackLog"=dword:000000fa
"DispatchEntries"=hex(7):4c,00,44,00,41,00,50,00,53,00,56,00,43,00
,00,00,53,00,\
  4d,00,54,00,50,00,53,00,56,00,43,00,00,00,00,00
"PoolThreadLimit"=dword:000007fc
"ThreadTimeout"=dword:00015180

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Inet
Info\Performance]
"Library"="infoctrs.dll"
"Open"="OpenINFOPerformanceData"
"Close"="CloseINFOPerformanceData"
"Collect"="CollectINFOPerformanceData"
"Last Counter"=dword:00000842
"Last Help"=dword:00000843
```

"First Counter"=dword:00000802
"First Help"=dword:00000803
"Library Validation
Code"=hex:fc,c0,18,b6,a8,43,c2,01,10,25,00,00,00,00,00,00
"WbemAdapFileTime"=hex:00,c3,bb,02,47,d4,c0,01
"WbemAdapFileSize"=dword:00002510
"WbemAdapStatus"=dword:00000000

WWW Service Registry

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC]
"Type"=dword:00000020
"Start"=dword:00000002
"ErrorControl"=dword:00000001
"ImagePath"=hex(2):43,00,3a,00,5c,00,57,00,49,00,4e,00,4e,00,54,00,5c,00,53,00,\

79,00,73,00,74,00,65,00,6d,00,33,00,32,00,5c,00,69,00,6e,00,65,00,74,00,73,\

00,72,00,76,00,5c,00,69,00,6e,00,65,00,74,00,69,00,6e,00,66,00,6f,00,2e,00,\
  65,00,78,00,65,00,00,00
"DisplayName"="World Wide Web Publishing Service"
"DependOnService"=hex(7):49,00,49,00,53,00,41,00,44,00,4d,00,49,00,4e,00,00,00,\
  00,00
"DependOnGroup"=hex(7):00,00
"ObjectName"="LocalSystem"
"Description"="Provides Web connectivity and administration through the Internet Information Services snap-in."

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\ASP]
"NOTE"="This is for backward compatibility only."

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\ASP\Parameters]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters]
"MajorVersion"=dword:00000005
"MinorVersion"=dword:00000000
"InstallPath"="C:\\WINNT\\System32\\inetsrv"
"CertMapList"="C:\\WINNT\\System32\\inetsrv\\iiscrmap.dll"
"AccessDeniedMessage"="Error: Access is Denied."
"Filter DLLs"=""
"LogFileDirectory"="C:\\WINNT\\System32\\LogFiles"
"AcceptExOutstanding"=dword:000003e8

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch\AdvancedDataFactory]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch\RDSServer.DataFactory]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Script Map]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Virtual Roots]
"/"="c:\\inetpub\\wwwroot,,205"
"/Scripts"="c:\\inetpub\\scripts,,204"
"/IISHelp"="c:\\winnt\\help\\iishelp,,201"
"/IISAdmin"="C:\\WINNT\\System32\\inetsrv\\iisadmin,,201"
"/IISSamples"="c:\\inetpub\\iissamples,,201"
"/MSADC"="c:\\program files\\common files\\system\\msadc,,205"
"/_vti_bin"="C:\\Program Files\\Common Files\\Microsoft Shared\\Web Server Extensions\\40\\isapi,,205"
"/Printers"="C:\\WINNT\\web\\printers,,201"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Performance]
"Library"="w3ctrs.dll"
"Open"="OpenW3PerformanceData"
"Close"="CloseW3PerformanceData"
"Collect"="CollectW3PerformanceData"
"Last Counter"=dword:000008e6
"Last Help"=dword:000008e7
"First Counter"=dword:00000844
"First Help"=dword:00000845
"Library Validation
Code"=hex:14,28,0a,b9,a8,43,c2,01,10,3d,00,00,00,00,00,00
"WbemAdapFileTime"=hex:00,c3,bb,02,47,d4,c0,01
"WbemAdapFileSize"=dword:00001d10
"WbemAdapStatus"=dword:00000000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Security]
"Security"=hex:01,00,14,80,a0,00,00,00,ac,00,00,00,14,00,00,00,30,00,00,00,02,\

00,1c,00,01,00,00,00,02,80,14,00,ff,01,0f,00,01,01,00,00,00,00,00,01,00,00,\

00,00,02,00,70,00,04,00,00,00,00,00,18,00,fd,01,02,00,01,01,00,00,00,00,\

05,12,00,00,00,74,00,6f,00,00,00,1c,00,ff,01,0f,00,01,02,00,00,00,00,00,05,\

20,00,00,00,20,02,00,00,72,00,73,00,00,00,18,00,8d,01,02,00,01,01,00,00,00,\

00,00,05,0b,00,00,00,20,02,00,00,00,00,1c,00,fd,01,02,00,01,02,00,00,00,00,\

00,05,20,00,00,00,23,02,00,00,72,00,73,00,01,01,00,00,00,00,00,05,12,00,00,\
  00,01,01,00,00,00,00,00,05,12,00,00,00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Enum]
"0"="Root\\LEGACY_W3SVC\\0000"
"Count"=dword:00000001
"NextInstance"=dword:00000001

System Information

System Information report written at: 09/04/2002 22:43:33
[System Information]

[Following are sub-categories of this main category]

[System Summary]

Item	Value
OS Name	Microsoft Windows 2000 Server
Version	5.0.2195 Service Pack 2 Build 2195
OS Manufacturer	Microsoft Corporation
System Name	ACL15
System Manufacturer	NEC
System Model	Express5800/120Rd-2 [N8100-756]
System Type	X86-based PC
Processor	x86 Family 6 Model 11 Stepping 1 GenuineIntel ~1263 Mhz
Processor	x86 Family 6 Model 11 Stepping 1 GenuineIntel ~1263 Mhz
BIOS Version	SCB20 v2.00
Windows Directory	C:\WINNT
System Directory	C:\WINNT\System32
Boot Device	\Device\Harddisk0\Partition1
Locale	United States
User Name	ACL15\Administrator
Total Physical Memory	1,047,852 KB
Available Physical Memory	891,924 KB
Total Virtual Memory	3,569,780 KB
Available Virtual Memory	3,349,812 KB
Page File Space	2,521,928 KB
Page File	C:\pagefile.sys

[Hardware Resources]

[Following are sub-categories of this main category]

[Conflicts/Sharing]

Resource	Device
IRQ 10	Standard OpenHCD USB Host Controller
IRQ 10	PCI standard host CPU bridge

[DMA]

Channel	Device	Status
4	Direct memory access controller	OK
2	Standard floppy disk controller	OK

[Forced Hardware]

Device	PNP Device ID
No Forced Hardware	

[I/O]

Address Range	Device	Status
0x0000-0x03AF	PCI bus	OK
0x0000-0x03AF	Direct memory access controller	OK
0x03B0-0x03DF	PCI bus	OK
0x03B0-0x03DF	ATI Technologies Inc. RAGE XL PCI	OK

0x03E0-0x0CF7 PCI bus OK
0x0D00-0x0FFF PCI bus OK
0x1000-0x1FFF PCI bus OK
0x1000-0x1FFF ATI Technologies Inc. RAGE XL PCI OK
0x1400-0x143F Intel 8255x-based PCI Ethernet Adapter (10/100) OK
0x1440-0x147F Intel 8255x-based PCI Ethernet Adapter (10/100) #2 OK
0x03C0-0x03DF ATI Technologies Inc. RAGE XL PCI OK
0x0A79-0x0A79 ISAPNP Read Data Port OK
0x0279-0x0279 ISAPNP Read Data Port OK
0x02F4-0x02F7 ISAPNP Read Data Port OK
0x04D0-0x04D1 Motherboard resources OK
0x0010-0x001F Motherboard resources OK
0x040B-0x040B Motherboard resources OK
0x04D6-0x04D6 Motherboard resources OK
0x0C14-0x0C14 Motherboard resources OK
0x0C49-0x0C49 Motherboard resources OK
0x0C52-0x0C52 Motherboard resources OK
0x0C6C-0x0C6C Motherboard resources OK
0x0C6F-0x0C6F Motherboard resources OK
0x0F50-0x0F57 Motherboard resources OK
0x0C00-0x0C01 Motherboard resources OK
0x0C98-0x0C98 Motherboard resources OK
0x0CD6-0x0CD7 Motherboard resources OK
0x002E-0x002F Motherboard resources OK
0x0530-0x0531 Motherboard resources OK
0x0500-0x051F Motherboard resources OK
0x0540-0x055F Motherboard resources OK
0x0580-0x058F Motherboard resources OK
0x0020-0x0021 Programmable interrupt controller OK
0x00A0-0x00A1 Programmable interrupt controller OK
0x0081-0x0083 Direct memory access controller OK
0x0087-0x0087 Direct memory access controller OK
0x0089-0x008B Direct memory access controller OK
0x008F-0x008F Direct memory access controller OK
0x00C0-0x00DF Direct memory access controller OK
0x0040-0x0043 System timer OK
0x0070-0x0071 System CMOS/real time clock OK
0x0061-0x0061 System speaker OK
0x00F0-0x00FF Numeric data processor OK
0x0060-0x0060 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard OK
0x0064-0x0064 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard OK
0x03F2-0x03F3 Standard floppy disk controller OK
0x03F4-0x03F5 Standard floppy disk controller OK
0x03F7-0x03F7 Standard floppy disk controller OK
0x03F8-0x03FF Communications Port (COM1) OK
0x02F8-0x02FF Communications Port (COM2) OK
0x03A0-0x03AF Standard Dual Channel PCI IDE Controller OK
0x1FFC-0x1FFF Standard Dual Channel PCI IDE Controller OK
0x01F0-0x01F7 Primary IDE Channel OK
0x03F6-0x03F6 Primary IDE Channel OK
0x0170-0x0177 Secondary IDE Channel OK
0x0376-0x0376 Secondary IDE Channel OK
0x2000-0x2FFF PCI bus OK
0x2000-0x2FFF Adaptec AIC-7899 - Ultra160 SCSI OK
0x2400-0x24FF Adaptec AIC-7899 - Ultra160 SCSI OK

[IRQs]

IRQ Number Device
9 Microsoft ACPI-Compliant System
21 Intel 8255x-based PCI Ethernet Adapter (10/100)
20 Intel 8255x-based PCI Ethernet Adapter (10/100) #2
18 ATI Technologies Inc. RAGE XL PCI
8 System CMOS/real time clock
13 Numeric data processor
12 Microsoft PS/2 Mouse
1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
6 Standard floppy disk controller
4 Communications Port (COM1)
3 Communications Port (COM2)
14 Primary IDE Channel
10 Standard OpenHCD USB Host Controller
10 PCI standard host CPU bridge
27 Adaptec AIC-7899 - Ultra160 SCSI
26 Adaptec AIC-7899 - Ultra160 SCSI

[Memory]

Range Device Status
0xA0000-0xBFFFF PCI bus OK
0xA0000-0xBFFFF ATI Technologies Inc. RAGE XL PCI OK
0xFC900000-0xFEAFFFFF PCI bus OK
0xFEAE0000-0xFEAE0FFF Intel 8255x-based PCI Ethernet Adapter (10/100) OK
0xFEAA0000-0xFEABFFFF Intel 8255x-based PCI Ethernet Adapter (10/100) OK
0xFEA90000-0xFEA90FFF Intel 8255x-based PCI Ethernet Adapter (10/100) #2 OK
0xFEA60000-0xFEA7FFFF Intel 8255x-based PCI Ethernet Adapter (10/100) #2 OK
0xFD000000-0xFDFFFFFF ATI Technologies Inc. RAGE XL PCI OK
0xFEAF0000-0xFEAF0FFF ATI Technologies Inc. RAGE XL PCI OK
0xFEA80000-0xFEA80FFF Standard OpenHCD USB Host Controller OK
0xFEB00000-0xFEBFFFFF PCI bus OK
0xFEBE0000-0xFEBE0FFF Adaptec AIC-7899 - Ultra160 SCSI OK
0xFEBF0000-0xFEBF0FFF Adaptec AIC-7899 - Ultra160 SCSI OK

[Components]

[Following are sub-categories of this main category]

[Multimedia]

[Following are sub-categories of this main category]

[Audio Codecs]

Codec Manufacturer Description Status File Version Size Creation Date
c:\winnt\system32\iac25_32.ax Intel Corporation Indeo® audio software OK
C:\WINNT\System32\IAC25_32.AX 2.05.53 195.00 KB (199,680 bytes) 12/8/1999 5:00:00
c:\winnt\system32\lhacm.acm Microsoft Corporation
OK C:\WINNT\System32\LHACM.ACM
4.4.3385 33.27 KB (34,064 bytes) 8/14/2002 15:42:54
c:\winnt\system32\tssoft32.acm DSP GROUP, INC.
OK C:\WINNT\System32\TSSOFT32.ACM
1.01 9.27 KB (9,488 bytes) 12/8/1999 5:00:00
c:\winnt\system32\msg711.acm Microsoft Corporation
OK C:\WINNT\System32\MSG711.ACM
5.00.2134.1 10.27 KB (10,512 bytes)
12/8/1999 5:00:00
c:\winnt\system32\msg723.acm Microsoft Corporation
OK C:\WINNT\System32\MSG723.ACM
4.4.3385 106.77 KB (109,328 bytes) 8/14/2002 15:42:53
c:\winnt\system32\msgsm32.acm Microsoft Corporation
OK C:\WINNT\System32\MSGSM32.ACM
5.00.2134.1 22.27 KB (22,800 bytes)
12/8/1999 5:00:00
c:\winnt\system32\imaadp32.acm Microsoft Corporation
OK C:\WINNT\System32\IMAADP32.ACM
5.00.2134.1 16.27 KB (16,656 bytes)
12/8/1999 5:00:00
c:\winnt\system32\msadp32.acm Microsoft Corporation
OK C:\WINNT\System32\MSADP32.ACM
5.00.2134.1 14.77 KB (15,120 bytes)
12/8/1999 5:00:00

[Video Codecs]

Codec Manufacturer Description Status File Version Size Creation Date
c:\winnt\system32\ir50_32.dll Intel Corporation Indeo® video 5.10 OK C:\WINNT\System32\IR50_32.DLL
R.5.10.15.2.55 737.50 KB (755,200 bytes)
12/8/1999 5:00:00
c:\winnt\system32\msvidc32.dll Microsoft Corporation
OK C:\WINNT\System32\MSVIDC32.DLL
5.00.2134.1 27.27 KB (27,920 bytes)
12/8/1999 5:00:00
c:\winnt\system32\msh263.drv Microsoft Corporation
OK C:\WINNT\System32\MSH263.DRV
4.4.3385 252.27 KB (258,320 bytes) 8/14/2002 15:42:26
c:\winnt\system32\ir32_32.dll Intel(R) Corporation
OK C:\WINNT\System32\IR32_32.DLL
Not Available 194.50 KB (199,168 bytes)
12/8/1999 5:00:00
c:\winnt\system32\iccvid.dll Radius Inc. OK
C:\WINNT\System32\ICCVID.DLL 1.10.0.6 108.00 KB (110,592 bytes) 12/8/1999 5:00:00
c:\winnt\system32\msrle32.dll Microsoft Corporation
OK C:\WINNT\System32\MSRLE32.DLL
5.00.2134.1 10.77 KB (11,024 bytes)
12/8/1999 5:00:00

c:\winnt\system32\msh261.drv Microsoft Corporation
OK C:\WINNT\System32\MSH261.DRV
4.4.3385 163.77 KB (167,696 bytes) 8/14/2002 15:42:53

[CD-ROM]

Item Value
Drive D:
Description CD-ROM Drive
Media Loaded False
Media Type CD-ROM
Name MATSHITA CD-ROM CR-177
Manufacturer (Standard CD-ROM drives)
Status OK
Transfer Rate Not Available
SCSI Target ID 0
PNP Device ID IDE\CDROMMATSHITA_CD-ROM_CR-177_____7N05____\5&569CEF7&0&0.0.0

[Sound Device]

Item Value
No sound devices

[Display]

Item Value
Name ATI Technologies Inc. RAGE XL PCI
PNP Device ID PCI\VEN_1002&DEV_4752&SUBSYS_81641033&REV_27\3&267A616A&0&60
Adapter Type ATI RAGE XL PCI, ATI Technologies Inc. compatible
Adapter Description ATI Technologies Inc. RAGE XL PCI
Adapter RAM 8.00 MB (8,388,608 bytes)
Installed Drivers atidrab.dll
Driver Version 5.00.2179.1
INF File display.inf (atirage3 section)
Color Planes 1
Color Table Entries 65536
Resolution 1024 x 768 x 60 hertz
Bits/Pixel 16

[Infrared]

Item Value
No infrared devices

[Input]

[Following are sub-categories of this main category]

[Keyboard]

Item Value
Description Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
Name Enhanced (101- or 102-key)
Layout 00000409
PNP Device ID ACPI\PNP0303\4&32BA4B66&0
NumberOfFunctionKeys 12

[Pointing Device]

Item Value
Hardware Type Microsoft PS/2 Mouse
Number of Buttons 3
Status OK
PNP Device ID ACPI\PNP0F03\4&32BA4B66&0
Power Management Supported False
Double Click Threshold 6
Handedness Right Handed Operation

[Modem]

Item Value
No modems

[Network]

[Following are sub-categories of this main category]

[Adapter]

Item Value
Name [00000000] RAS Async Adapter
Adapter Type Not Available
Product Name RAS Async Adapter
Installed True
PNP Device ID Not Available
Last Reset Not Available
Index 0
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Not Available

Name [00000001] WAN Miniport (L2TP)
Adapter Type Not Available
Product Name WAN Miniport (L2TP)
Installed True
PNP Device ID ROOT\MS_L2TPMINIPORT\0000
Last Reset Not Available
Index 1
Service Name Rasl2tp
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Rasl2tp
Driver c:\winnt\system32\drivers\rasl2tp.sys (50800, 5.00.2179.1)

Name [00000002] WAN Miniport (PPTP)
Adapter Type Wide Area Network (WAN)
Product Name WAN Miniport (PPTP)
Installed True
PNP Device ID ROOT\MS_PPTPMINIPORT\0000
Last Reset Not Available
Index 2
Service Name PptpMiniport
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 50:50:54:50:30:30
Service Name PptpMiniport
Driver c:\winnt\system32\drivers\raspptp.sys (47856, 5.00.2160.1)

Name [00000003] Direct Parallel
Adapter Type Not Available
Product Name Direct Parallel
Installed True
PNP Device ID ROOT\MS_PTIMINIPORT\0000
Last Reset Not Available
Index 3
Service Name Raspti
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name Raspti
Driver c:\winnt\system32\drivers\raspti.sys (16880, 5.00.2146.1)

Name [00000004] WAN Miniport (IP)
Adapter Type Not Available
Product Name WAN Miniport (IP)
Installed True
PNP Device ID ROOT\MS_NDISWANIP\0000
Last Reset Not Available
Index 4
Service Name NdisWan
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Service Name NdisWan
Driver c:\winnt\system32\drivers\ndiswan.sys (90096, 5.00.2195.2779)

Name [00000005] Intel 8255x-based PCI Ethernet Adapter (10/100)
Adapter Type Ethernet 802.3
Product Name Intel 8255x-based PCI Ethernet Adapter (10/100)
Installed True
PNP Device ID PCI\VEN_8086&DEV_1229&SUBSYS_81641033&REV_0D\3&267A616A&0&18
Last Reset Not Available
Index 5
Service Name E100B
IP Address 10.1.1.15
IP Subnet 255.255.255.0
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:03:47:D5:A5:53
Service Name E100B
IRQ Number 21
I/O Port 0x1400-0x143F
Driver c:\winnt\system32\drivers\e100bnt5.sys (119056, 5.40.17.0000)

Name [00000006] Intel 8255x-based PCI Ethernet Adapter (10/100)
Adapter Type Ethernet 802.3
Product Name Intel 8255x-based PCI Ethernet Adapter (10/100)
Installed True
PNP Device ID PCI\VEN_8086&DEV_1229&SUBSYS_81641033&REV_0D\3&267A616A&0&20
Last Reset Not Available
Index 6
Service Name E100B
IP Address 10.10.15.250
IP Subnet 255.255.255.0
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:03:47:D5:A5:54
Service Name E100B
IRQ Number 20
I/O Port 0x1440-0x147F
Driver c:\winnt\system32\drivers\e100bnt5.sys (119056, 5.40.17.0000)

[Protocol]

Item Value
Name MSAFD Tcpip [TCP/IP]
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 16 bytes
MaximumMessageSize 0 bytes
MessageOriented False
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData True
SupportsGracefulClosing True
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD Tcpip [UDP/IP]
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 16 bytes
MaximumMessageSize 65467 bytes
MessageOriented True
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting True

Name RSVP UDP Service Provider
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 16 bytes
MaximumMessageSize 65467 bytes
MessageOriented True
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption True
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting True

Name RSVP TCP Service Provider
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 16 bytes
MaximumMessageSize 0 bytes
MessageOriented False
MinimumAddressSize 16 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption True
SupportsExpeditedData True
SupportsGracefulClosing True
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{C26351A6-BEBA-4A8B-ACA9-DE2DF3EBA5C4}] SEQPACKET 3
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{C26351A6-BEBA-4A8B-ACA9-DE2DF3EBA5C4}] DATAGRAM 3
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{61CEFC04-F55B-45AB-8EDC-31238922E0B0}] SEQPACKET 0
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{61CEFC04-F55B-45AB-8EDC-31238922E0B0}] DATAGRAM 0
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{48A1B6E2-8B20-4B70-8C0C-431573B8B961}] SEQPACKET 1
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{48A1B6E2-8B20-4B70-8C0C-431573B8B961}] DATAGRAM 1
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{E3A054DB-9B49-4D4B-BACC-C6E33BB3DAB1}] SEQPACKET 2
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{E3A054DB-9B49-4D4B-BACC-C6E33BB3DAB1}] DATAGRAM 2
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

[WinSock]

Item Value
File c:\winnt\system32\winsock.dll
Version 3.10
Size 2.80 KB (2,864 bytes)

File c:\winnt\system32\wsock32.dll
Version 5.00.2195.2871
Size 21.27 KB (21,776 bytes)

[Ports]

[Following are sub-categories of this main category]

[Serial]

Item Value
Name COM1
Status OK
PNP Device ID ACPI\PNP0501\1
Maximum Input Buffer Size 0
Maximum Output Buffer Size False
Settable Baud Rate True
Settable Data Bits True
Settable Flow Control True
Settable Parity True
Settable Parity Check True
Settable Stop Bits True
Settable RLSD True
Supports RLSD True
Supports 16 Bit Mode False
Supports Special Characters False
Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy 0
Abort Read/Write on Error 0
Binary Mode Enabled -1
Continue XMit on XOff 0
CTS Outflow Control 0
Discard NULL Bytes 0
DSR Outflow Control 0
DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0
Error Replacement Enabled 0
Event Character 0
Parity Check Enabled 0
RTS Flow Control Type Enable
XOff Character 19
XOffXMit Threshold 512
XOn Character 17
XOnXMit Threshold 2048
XOnXOff InFlow Control 0
XOnXOff OutFlow Control 0
IRQ Number 4
I/O Port 0x03F8-0x03FF
Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

Name COM2
Status OK
PNP Device ID ACPI\PNP0501\2
Maximum Input Buffer Size 0
Maximum Output Buffer Size False
Settable Baud Rate True
Settable Data Bits True
Settable Flow Control True
Settable Parity True
Settable Parity Check True
Settable Stop Bits True
Settable RLSD True
Supports RLSD True
Supports 16 Bit Mode False
Supports Special Characters False
Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy 0
Abort Read/Write on Error 0
Binary Mode Enabled -1
Continue XMit on XOff 0
CTS Outflow Control 0
Discard NULL Bytes 0
DSR Outflow Control 0

DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0
Error Replacement Enabled 0
Event Character 0
Parity Check Enabled 0
RTS Flow Control Type Enable
XOff Character 19
XOffXMit Threshold 512
XOn Character 17
XOnXMit Threshold 2048
XOnXOff InFlow Control 0
XOnXOff OutFlow Control 0
IRQ Number 3
I/O Port 0x02F8-0x02FF
Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

[Parallel]

Item Value
No parallel port information

[Storage]

[Following are sub-categories of this main category]

[Drives]

Item Value
Drive A:
Description 3 1/2 Inch Floppy Drive

Drive C:
Description Local Fixed Disk
Compressed False
File System NTFS
Size 16.93 GB (18,177,835,008 bytes)
Free Space 13.67 GB (14,673,559,552 bytes)
Volume Name
Volume Serial Number 4016B739
Partition Disk #0, Partition #0
Partition Size 16.93 GB (18,177,836,544 bytes)
Starting Offset 32256 bytes
Drive Description Disk drive
Drive Manufacturer (Standard disk drives)
Drive Model QUANTUM ATLAS10K3_18_SCA SCSI Disk Device
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 1
Drive SCSIBus 0
Drive SCSILogicalUnit 0
Drive SCSIPort 3
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 18186094080 bytes
Drive TotalCylinders 2211
Drive TotalSectors 35519715
Drive TotalTracks 563805
Drive TracksPerCylinder 255

[SCSI]

Item Value
Name Adaptec AIC-7899 - Ultra160 SCSI
Caption Adaptec AIC-7899 - Ultra160 SCSI
Driver adpu160m
Status OK
PNP Device ID PCI\VEN_9005&DEV_00CF&SUBSYS_81641033&REV_01\3&13C0B0C5&0&38
Device ID PCI\VEN_9005&DEV_00CF&SUBSYS_81641033&REV_01\3&13C0B0C5&0&38
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 27
I/O Port 0x2400-0x24FF
Driver c:\winnt\system32\drivers\adpu160m.sys (81776, d4.0S2 (4.10.4000))

Name Adaptec AIC-7899 - Ultra160 SCSI
Caption Adaptec AIC-7899 - Ultra160 SCSI
Driver adpu160m
Status OK
PNP Device ID PCI\VEN_9005&DEV_00CF&SUBSYS_81641033&REV_01\3&13C0B0C5&0&39
Device ID PCI\VEN_9005&DEV_00CF&SUBSYS_81641033&REV_01\3&13C0B0C5&0&39
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 26
I/O Port 0x2000-0x2FFF
Driver c:\winnt\system32\drivers\adpu160m.sys (81776, d4.0S2 (4.10.4000))

[Printing]

Name Port Name Server Name
No printing information

[Problem Devices]

Device PNP Device ID Error Code
No Problem Devices

[USB]

Device PNP Device ID
Standard OpenHCD USB Host Controller PCI\VEN_1166&DEV_0220&SUBSYS_81641033&REV_05\3&267A616A&0&7A
USB Root Hub USB\ROOT_HUB\4&35479919&0

[Software Environment]

[Following are sub-categories of this main category]

[Drivers]

Name Description File Type Started Start Mode
State Status Error Control Accept
Pause Accept Stop
abiosdsk Abiosdsk Not Available Kernel Driver
False Disabled Stopped OK Ignore
False False
abp480n5 abp480n5 Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
acpi Microsoft ACPI Driver c:\winnt\system32\drivers\acpi.sys
Kernel Driver True Boot Running
OK Normal False True
acpiec ACPIEC c:\winnt\system32\drivers\acpiec.sys
Kernel Driver False Disabled Stopped
OK Normal False False
adpu160m adpu160m c:\winnt\system32\drivers\adpu160m.sys
Kernel Driver True Boot Running
OK Normal False True
afd AFD Networking Support Environment
c:\winnt\system32\drivers\afd.sys Kernel Driver
True Auto Running OK Normal
False True
aha154x Aha154x Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
aic116x aic116x Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
aic78u2 aic78u2 Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
aic78xx aic78xx Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
ami0nt ami0nt Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
amsint amsint Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
asc asc Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
asc3350p asc3350p Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
asc3550 asc3550 Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
asyncmac RAS Asynchronous Media Driver
c:\winnt\system32\drivers\asyncmac.sys Kernel
Driver False Manual Stopped OK Normal
False False
atapi Standard IDE/ESDI Hard Disk Controller
c:\winnt\system32\drivers\atapi.sys Kernel

```
Driver          True    Boot    Running OK      Normal
                False   True
atdisk          Atdisk  Not Available           Kernel Driver
                False   Disabled        Stopped OK      Ignore
                False   False
atirage3        atirage3        c:\winnt\system32\drivers\atimpab.sys
                Kernel Driver           True    Manual  Running
                OK      Ignore  False   True
atmarpc         ATM ARP Client Protocol
                c:\winnt\system32\drivers\atmarpc.sys           Kernel
Driver          False   Manual  Stopped OK      Normal
                False   False
audstub         Audio Stub Driver
                c:\winnt\system32\drivers\audstub.sys           Kernel
Driver          True    Manual  Running OK      Normal
                False   True
beep            Beep    c:\winnt\system32\drivers\beep.sys
                Kernel Driver           True    System  Running
                OK      Normal  False   True
buslogic        BusLogic        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
cd20xrnt        cd20xrnt        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
cdaudio         Cdaudio c:\winnt\system32\drivers\cdaudio.sys
                Kernel Driver           False   System  Stopped
                OK      Ignore  False   False
cdfs            Cdfs    c:\winnt\system32\drivers\cdfs.sys File
System Driver           True    Disabled        Running OK
                Normal  False   True
cdrom           CD-ROM Driver
                c:\winnt\system32\drivers\cdrom.sys             Kernel
Driver          True    System  Running OK      Normal
                False   True
changer         Changer Not Available           Kernel Driver
                False   System  Stopped OK      Ignore
                False   False
cpqarray        Cpqarray        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
cpqarry2        cpqarry2        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
cpqfcalm        cpqfcalm        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
cpqfws2e        cpqfws2e        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
dac960nt        dac960nt        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
deckzpsx        deckzpsx        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
dfsdriver       DfsDriver       c:\winnt\system32\drivers\dfs.sys       File
System Driver           True    Boot    Running OK
                Normal  False   True
disk            Disk Driver     c:\winnt\system32\drivers\disk.sys      Kernel
Driver          True    Boot    Running OK      Normal
                False   True
diskperf        Diskperf        c:\winnt\system32\drivers\diskperf.sys
                Kernel Driver           True    Boot    Running
                OK      Normal  False   True
dmboot          dmboot  c:\winnt\system32\drivers\dmboot.sys
                Kernel Driver           False   Disabled        Stopped
                OK      Normal  False   False
dmio            Logical Disk Manager Driver
                c:\winnt\system32\drivers\dmio.sys              Kernel
Driver          True    Boot    Running OK      Normal
                False   True
dmload          dmload  c:\winnt\system32\drivers\dmload.sys
                Kernel Driver           True    Boot    Running
                OK      Normal  False   True
e100b           Intel(R) PRO Adapter Driver
                c:\winnt\system32\drivers\e100bnt5.sys          Kernel
Driver          True    Manual  Running OK      Normal
                False   True
efs             EFS     c:\winnt\system32\drivers\efs.sys       File
System Driver           True    Disabled        Running OK
                Normal  False   True
explog          ExpLog  c:\winnt\system32\drivers\explog.sys
                Kernel Driver           True    System  Running
                OK      Normal  False   True
fastfat         Fastfat c:\winnt\system32\drivers\fastfat.sys
                File System Driver      True    Disabled        Running
                OK      Normal  False   True
fd16_700        Fd16_700        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
fdc             Floppy Disk Controller Driver
                c:\winnt\system32\drivers\fdc.sys       Kernel Driver
                True    Manual  Running OK      Normal
                False   True
fips            Fips    c:\winnt\system32\drivers\fips.sys      Kernel
Driver          True    Auto    Running OK      Normal
                False   True
fireport        fireport        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
flashpnt        flashpnt        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
flpydisk        Floppy Disk Driver
                c:\winnt\system32\drivers\flpydisk.sys          Kernel
Driver          True    Manual  Running OK      Normal
                False   True
ftdisk          Volume Manager Driver
                c:\winnt\system32\drivers\ftdisk.sys            Kernel
Driver          True    Boot    Running OK      Normal
                False   True
gpc             Generic Packet Classifier
                c:\winnt\system32\drivers\msgpc.sys             Kernel
Driver          True    Manual  Running OK      Normal
                False   True
i8042prt        i8042 Keyboard and PS/2 Mouse Port Driver
                c:\winnt\system32\drivers\i8042prt.sys          Kernel
Driver          True    System  Running OK      Normal
                False   True
ini910u         ini910u Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
intelide        IntelIde        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
ipfilterdriver          IP Traffic Filter Driver
                c:\winnt\system32\drivers\ipfltdrv.sys          Kernel
Driver          False   Manual  Stopped OK      Normal
                False   False
ipinip          IP in IP Tunnel Driver
                c:\winnt\system32\drivers\ipinip.sys            Kernel
Driver          False   Manual  Stopped OK      Normal
                False   False
ipnat           IP Network Address Translator
                c:\winnt\system32\drivers\ipnat.sys             Kernel
Driver          False   Manual  Stopped OK      Normal
                False   False
ipsec           IPSEC driver
                c:\winnt\system32\drivers\ipsec.sys             Kernel
Driver          True    Manual  Running OK      Normal
                False   True
ipsraidn        ipsraidn        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
isapnp          PnP ISA/EISA Bus Driver
                c:\winnt\system32\drivers\isapnp.sys            Kernel
Driver          True    Boot    Running OK      Critical
                False   True
kbdclass        Keyboard Class Driver
                c:\winnt\system32\drivers\kbdclass.sys          Kernel
Driver          True    System  Running OK      Normal
                False   True
ksecdd          KSecDD  c:\winnt\system32\drivers\ksecdd.sys
                Kernel Driver           True    Boot    Running
                OK      Normal  False   True
lbrtfdc         lbrtfdc Not Available           Kernel Driver
                False   System  Stopped OK      Ignore
                False   False
lp6nds35        lp6nds35        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
mnmdd           mnmdd   c:\winnt\system32\drivers\mnmdd.sys
                Kernel Driver           True    System  Running
                OK      Ignore  False   True
modem           Modem   c:\winnt\system32\drivers\modem.sys
                Kernel Driver           False   Manual  Stopped
                OK      Ignore  False   False
mouclass        Mouse Class Driver
                c:\winnt\system32\drivers\mouclass.sys          Kernel
Driver          True    System  Running OK      Normal
                False   True
mountmgr        MountMgr        c:\winnt\system32\drivers\mountmgr.sys
                Kernel Driver           True    Boot    Running
                OK      Normal  False   True
mraid35x        mraid35x        Not Available           Kernel Driver
                False   Disabled        Stopped OK      Normal
                False   False
mrxsmb          MRXSMB  c:\winnt\system32\drivers\mrxsmb.sys
                File System Driver      True    System  Running
                OK      Normal  False   True
msfs            Msfs    c:\winnt\system32\drivers\msfs.sys
                File System Driver      True    System  Running
                OK      Normal  False   True
```

```
mskssrv  Microsoft Streaming Service Proxy
         c:\winnt\system32\drivers\mskssrv.sys          Kernel
Driver   False    Manual   Stopped  OK       Normal
         False    False
mspclock Microsoft Streaming Clock Proxy
         c:\winnt\system32\drivers\mspclock.sys         Kernel
Driver   False    Manual   Stopped  OK       Normal
         False    False
mspqm    Microsoft Streaming Quality Manager Proxy
         c:\winnt\system32\drivers\mspqm.sys            Kernel
Driver   False    Manual   Stopped  OK       Normal
         False    False
mup      Mup      c:\winnt\system32\drivers\mup.sys      File
System Driver     True     Boot     Running  OK
         Normal   False    True
ncrc710  Ncrc710  Not Available     Kernel Driver
         False    Disabled Stopped  OK       Normal
         False    False
ndis     NDIS System Driver  c:\winnt\system32\drivers\ndis.sys
         Kernel Driver       True     Boot     Running
         OK       Normal     False    True
ndistapi Remote Access NDIS TAPI Driver
         c:\winnt\system32\drivers\ndistapi.sys         Kernel
Driver   True     Manual   Running  OK       Normal
         False    True
ndiswan  Remote Access NDIS WAN Driver
         c:\winnt\system32\drivers\ndiswan.sys          Kernel
Driver   True     Manual   Running  OK       Normal
         False    True
ndproxy  NDIS Proxy
         c:\winnt\system32\drivers\ndproxy.sys          Kernel
Driver   True     Manual   Running  OK       Normal
         False    True
nechwid  nechwid  c:\winnt\system32\drivers\nechwid.sys
         Kernel Driver       False    Manual   Stopped
         OK       Normal     False    False
necras   NEC Baseboard Management Controller
         c:\winnt\system32\drivers\necras.sys           Kernel
Driver   True     System   Running  OK       Normal
         False    True
netbios  NetBIOS Interface
         c:\winnt\system32\drivers\netbios.sys          File
System Driver     True     System   Running  OK
         Normal   False    True
netbt    NetBios over Tcpip
         c:\winnt\system32\drivers\netbt.sys            Kernel
Driver   True     System   Running  OK       Normal
         False    True
netdetect NetDetect c:\winnt\system32\drivers\netdtect.sys
         Kernel Driver       False    Manual   Stopped
         OK       Normal     False    False
npfs     Npfs     c:\winnt\system32\drivers\npfs.sys     File
System Driver     True     System   Running  OK
         Normal   False    True
ntfs     Ntfs     c:\winnt\system32\drivers\ntfs.sys     File
System Driver     True     Disabled Running  OK
         Normal   False    True
null     Null     c:\winnt\system32\drivers\null.sys     Kernel
Driver   True     System   Running  OK       Normal
         False    True
nwlnkflt IPX Traffic Filter Driver
         c:\winnt\system32\drivers\nwlnkflt.sys         Kernel
Driver   False    Manual   Stopped  OK       Normal
         False    False
nwlnkfwd IPX Traffic Forwarder Driver
         c:\winnt\system32\drivers\nwlnkfwd.sys         Kernel
Driver   False    Manual   Stopped  OK       Normal
         False    False
openhci  Microsoft USB Open Host Controller Driver
         c:\winnt\system32\drivers\openhci.sys          Kernel
Driver   True     Manual   Running  OK       Normal
         False    True
parallel Parallel c:\winnt\system32\drivers\parallel.sys
         Kernel Driver       False    Auto     Stopped
         OK       Ignore     False    False
parport  Parport  c:\winnt\system32\drivers\parport.sys
         Kernel Driver       False    Auto     Stopped
         OK       Ignore     False    False
partmgr  PartMgr  c:\winnt\system32\drivers\partmgr.sys
         Kernel Driver       True     Boot     Running
         OK       Normal     False    True
parvdm   ParVdm   c:\winnt\system32\drivers\parvdm.sys
         Kernel Driver       False    Auto     Stopped
         OK       Ignore     False    False
pci      PCI Bus Driver      c:\winnt\system32\drivers\pci.sys
         Kernel Driver       True     Boot     Running
         OK       Critical   False    True
pcidump  PCIDump  Not Available     Kernel Driver
         False    System   Stopped  OK       Ignore
         False    False
pciide   PCIIde   c:\winnt\system32\drivers\pciide.sys
         Kernel Driver       True     Boot     Running
         OK       Normal     False    True
pcmcia   Pcmcia   c:\winnt\system32\drivers\pcmcia.sys
         Kernel Driver       False    Disabled Stopped
         OK       Normal     False    False
pdcomp   PDCOMP   Not Available     Kernel Driver
         False    Manual   Stopped  OK       Ignore
         False    False
pdframe  PDFRAME  Not Available     Kernel Driver
         False    Manual   Stopped  OK       Ignore
         False    False
pdreli   PDRELI   Not Available     Kernel Driver
         False    Manual   Stopped  OK       Ignore
         False    False
pdrframe PDRFRAME           Not Available     Kernel
Driver   False    Manual   Stopped  OK       Ignore
         False    False
pptpminiport      WAN Miniport (PPTP)
         c:\winnt\system32\drivers\raspptp.sys          Kernel
Driver   True     Manual   Running  OK       Normal
         False    True
ptilink  Direct Parallel Link Driver
         c:\winnt\system32\drivers\ptilink.sys          Kernel
Driver   True     Manual   Running  OK       Normal
         False    True
ql1080   ql1080   Not Available     Kernel Driver
         False    Disabled Stopped  OK       Normal
         False    False
ql10wnt  Ql10wnt  Not Available     Kernel Driver
         False    Disabled Stopped  OK       Normal
         False    False
ql1240   ql1240   Not Available     Kernel Driver
         False    Disabled Stopped  OK       Normal
         False    False
ql2100   ql2100   Not Available     Kernel Driver
         False    Disabled Stopped  OK       Normal
         False    False
rasacd   Remote Access Auto Connection Driver
         c:\winnt\system32\drivers\rasacd.sys           Kernel
Driver   True     System   Running  OK       Normal
         False    True
rasl2tp  WAN Miniport (L2TP)
         c:\winnt\system32\drivers\rasl2tp.sys          Kernel
Driver   True     Manual   Running  OK       Normal
         False    True
raspti   Direct Parallel
         c:\winnt\system32\drivers\raspti.sys           Kernel
Driver   True     Manual   Running  OK       Normal
         False    True
rca      Microsoft Streaming Network Raw Channel Access
         c:\winnt\system32\drivers\rca.sys  Kernel Driver
         False    Manual   Stopped  OK       Normal
         False    False
rdbss    Rdbss    c:\winnt\system32\drivers\rdbss.sys
         File System Driver  True     System   Running
         OK       Normal     False    True
rdpwd    RDPWD    c:\winnt\system32\drivers\rdpwd.sys
         Kernel Driver       False    Manual   Stopped
         OK       Ignore     False    False
redbook  Digital CD Audio Playback Filter Driver
         c:\winnt\system32\drivers\redbook.sys          Kernel
Driver   False    System   Stopped  OK       Normal
         False    False
serenum  Serenum Filter Driver
         c:\winnt\system32\drivers\serenum.sys          Kernel
Driver   True     Manual   Running  OK       Normal
         False    True
serial   Serial port driver
         c:\winnt\system32\drivers\serial.sys           Kernel
Driver   True     System   Running  OK       Ignore
         False    True
sfloppy  Sfloppy  c:\winnt\system32\drivers\sfloppy.sys
         Kernel Driver       False    System   Stopped
         OK       Ignore     False    False
sglfb    sglfb    Not Available     Kernel Driver
         False    System   Stopped  OK       Normal
         False    False
simbad   Simbad   Not Available     Kernel Driver
         False    Disabled Stopped  OK       Normal
         False    False
sparrow  Sparrow  Not Available     Kernel Driver
         False    Disabled Stopped  OK       Normal
         False    False
spud     Special Purpose Utility Driver
         c:\winnt\system32\drivers\spud.sys             Kernel
Driver   True     Manual   Running  OK       Normal
         False    True
srv      Srv      c:\winnt\system32\drivers\srv.sys      File
System Driver     True     Manual   Running  OK
         Normal   False    True
swenum   Software Bus Driver
         c:\winnt\system32\drivers\swenum.sys           Kernel
```

```
Driver    True    Manual    Running    OK    Normal
          False   True
symc810   symc810 Not Available        Kernel Driver
          False   Disabled  Stopped    OK    Normal
          False   False
symc8xx   symc8xx Not Available        Kernel Driver
          False   Disabled  Stopped    OK    Normal
          False   False
sym_hi    sym_hi  Not Available        Kernel Driver
          False   Disabled  Stopped    OK    Normal
          False   False
tcpip     TCP/IP Protocol Driver
          c:\winnt\system32\drivers\tcpip.sys          Kernel
Driver    True    System    Running    OK    Normal
          False   True
tdasync   TDASYNC c:\winnt\system32\drivers\tdasync.sys
          Kernel Driver      False      Manual    Stopped
          OK      Ignore     False      False
tdipx     TDIPX   c:\winnt\system32\drivers\tdipx.sys
          Kernel Driver      False      Manual    Stopped
          OK      Ignore     False      False
tdnetb    TDNETB  c:\winnt\system32\drivers\tdnetb.sys
          Kernel Driver      False      Manual    Stopped
          OK      Ignore     False      False
tdpipe    TDPIPE  c:\winnt\system32\drivers\tdpipe.sys
          Kernel Driver      False      Manual    Stopped
          OK      Ignore     False      False
tdspx     TDSPX   c:\winnt\system32\drivers\tdspx.sys
          Kernel Driver      False      Manual    Stopped
          OK      Ignore     False      False
tdtcp     TDTCP   c:\winnt\system32\drivers\tdtcp.sys
          Kernel Driver      False      Manual    Stopped
          OK      Ignore     False      False
termdd    Terminal Device Driver
          c:\winnt\system32\drivers\termdd.sys          Kernel
Driver    False   Disabled  Stopped    OK    Normal
          False   False
tga       tga     Not Available        Kernel Driver
          False   System    Stopped    OK    Ignore
          False   False
udfs      Udfs    c:\winnt\system32\drivers\udfs.sys File
System Driver     False     Disabled   Stopped   OK
          Normal  False     False
ultra66   ultra66 Not Available        Kernel Driver
          False   Disabled  Stopped    OK    Normal
          False   False
update    Microcode Update Driver
          c:\winnt\system32\drivers\update.sys          Kernel
Driver    True    Manual    Running    OK    Normal
          False   True
usbhub    Microsoft USB Standard Hub Driver
          c:\winnt\system32\drivers\usbhub.sys          Kernel
Driver    True    Manual    Running    OK    Normal
          False   True
vgasave   VgaSave c:\winnt\system32\drivers\vga.sys  Kernel
Driver    True    System    Running    OK    Ignore
          False   True
wanarp    Remote Access IP ARP Driver
          c:\winnt\system32\drivers\wanarp.sys          Kernel
Driver    True    Manual    Running    OK    Normal
          False   True
wdica     WDICA   Not Available        Kernel Driver
          False   Manual    Stopped    OK    Ignore
          False   False

[Environment Variables]

Variable  Value   User Name
ComSpec   %SystemRoot%\system32\cmd.exe
          <SYSTEM>
Os2LibPath        %SystemRoot%\system32\os2\dll;
          <SYSTEM>
Path
          %SystemRoot%\system32;%SystemRoot%;%SystemRoo
t%\System32\Wbem;C:\Program Files\Microsoft SQL
Server\80\Tools\BINN  <SYSTEM>
windir    %SystemRoot%      <SYSTEM>
OS        Windows_NT        <SYSTEM>
PROCESSOR_ARCHITECTURE  x86       <SYSTEM>
PROCESSOR_LEVEL 6         <SYSTEM>
PROCESSOR_IDENTIFIER      x86 Family 6 Model 11 Stepping 1,
GenuineIntel      <SYSTEM>
PROCESSOR_REVISION        0b01    <SYSTEM>
NUMBER_OF_PROCESSORS      2       <SYSTEM>
PATHEXT   .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH
          <SYSTEM>
TEMP      %SystemRoot%\TEMP       <SYSTEM>
TMP       %SystemRoot%\TEMP       <SYSTEM>
TEMP      %USERPROFILE%\Local Settings\Temp
          ACL15\Administrator
TMP       %USERPROFILE%\Local Settings\Temp
          ACL15\Administrator

[Jobs]

[ Following are sub-categories of this main category ]

[Print]

Document  Size    Owner     Notify    Status    Time
Submitted Start Time Until Time Elapsed Time    Pages
Printed   Job ID  Priority  Parameters        Driver
Name      Print Processor   Host Print Queue  Data Type
          Name
No print jobs

[Network Connections]

Local Name        Remote Name       Type      Status
          User Name
No network connections information

[Running Tasks]

Name      Path    Process ID Priority  Min Working Set
          Max Working Set     Start Time Version   Size
          File Date
system idle process  Not Available    0         0
          Not Available     Not Available       Not
Available Unknown Unknown   Unknown
system    Not Available     8         8         0
          1413120 Not Available       Unknown   Unknown
          Unknown
smss.exe  c:\winnt\system32\smss.exe  164       11
          204800    1413120   9/4/2002 20:07:35
          5.00.2195.2901      44.27 KB (45,328 bytes)
          12/8/1999 5:00:00
csrss.exe Not Available     192       13        Not
Available Not Available     9/4/2002 20:07:39   Unknown
          Unknown   Unknown
winlogon.exe      c:\winnt\system32\winlogon.exe  188
          13        204800    1413120   9/4/2002 20:07:41
          5.00.2195.2953      173.77 KB (177,936 bytes)
          12/8/1999 5:00:00
services.exe      c:\winnt\system32\services.exe  240
          9         204800    1413120   9/4/2002 20:07:42
          5.00.2195.2780      86.77 KB (88,848 bytes)
          12/8/1999 5:00:00
lsass.exe c:\winnt\system32\lsass.exe  252       9
          204800    1413120   9/4/2002 20:07:42
          5.00.2195.2964      32.77 KB (33,552 bytes)
          12/8/1999 5:00:00
svchost.exe       c:\winnt\system32\svchost.exe  424
          8         204800    1413120   9/4/2002 20:07:44
          5.00.2134.1         7.77 KB (7,952 bytes)  12/8/1999
5:00:00
spoolsv.exe       c:\winnt\system32\spoolsv.exe  452
          8         204800    1413120   9/4/2002 20:07:44
          5.00.2161.1         43.77 KB (44,816 bytes)
          8/15/2002 0:25:24
msdtc.exe c:\winnt\system32\msdtc.exe  480       8
          204800    1413120   9/4/2002 20:07:44
          1999.9.3421.3       6.77 KB (6,928 bytes)  8/15/2002
0:38:24
svchost.exe       c:\winnt\system32\svchost.exe  604
          8         204800    1413120   9/4/2002 20:07:45
          5.00.2134.1         7.77 KB (7,952 bytes)  12/8/1999
5:00:00
llssrv.exe c:\winnt\system32\llssrv.exe  628       9
          204800    1413120   9/4/2002 20:07:45
          5.00.2195.2649      114.27 KB (117,008 bytes)
          5/4/2001 12:05:02
regsvc.exe c:\winnt\system32\regsvc.exe  676       8
          204800    1413120   9/4/2002 20:07:46
          5.00.2195.2104      65.27 KB (66,832 bytes)
          8/15/2002 14:12:39
mstask.exe c:\winnt\system32\mstask.exe  708       8
          204800    1413120   9/4/2002 20:07:47
          4.71.2195.1         115.27 KB (118,032 bytes)
          8/15/2002 14:12:34
inetinfo.exe c:\winnt\system32\inetsrv\inetinfo.exe  780
          8         204800    1413120   9/4/2002 20:07:47
          5.00.0984  14.27 KB (14,608 bytes)  8/15/2002
14:13:24
dfssvc.exe c:\winnt\system32\dfssvc.exe  924       8
          204800    1413120   9/4/2002 20:07:54
          5.00.2195.2841      88.27 KB (90,384 bytes)
          8/15/2002 14:12:24
explorer.exe      c:\winnt\explorer.exe  1020      8
          204800    1413120   9/4/2002 22:41:17
          5.00.3315.2846      237.27 KB (242,960 bytes)
          8/15/2002 14:12:44
```

internat.exe c:\winnt\system32\internat.exe 1072 8 204800 1413120 9/4/2002 22:41:18 5.00.2920.0000 20.27 KB (20,752 bytes) 12/8/1999 5:00:00
mmc.exe c:\winnt\system32\mmc.exe 1116 8 204800 1413120 9/4/2002 22:41:27 5.00.2195.2301 589.27 KB (603,408 bytes) 8/15/2002 14:12:29
winmgmt.exe c:\winnt\system32\wbem\winmgmt.exe 1124 8 204800 1413120 9/4/2002 22:41:28 1.50.1085.0029 192.08 KB (196,685 bytes) 8/15/2002 14:12:48
svchost.exe c:\winnt\system32\svchost.exe 1324 8 204800 1413120 9/4/2002 22:41:48 5.00.2134.1 7.77 KB (7,952 bytes) 12/8/1999 5:00:00
rsvp.exe c:\winnt\system32\rsvp.exe 1356 8 204800 1413120 9/4/2002 22:43:20 5.00.2167.1 172.77 KB (176,912 bytes) 12/8/1999 5:00:00

[Loaded Modules]

Name Version Size File Date Manufacturer Path
traffic.dll 5.00.2139.1 30.77 KB (31,504 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\traffic.dll
rsvp.exe 5.00.2167.1 172.77 KB (176,912 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\rsvp.exe
tapisrv.dll 5.00.2195.2955 169.27 KB (173,328 bytes) 8/15/2002 14:12:42 Microsoft Corporation c:\winnt\system32\tapisrv.dll
perfos.dll 5.00.2155.1 21.27 KB (21,776 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\perfos.dll
ntmarta.dll 5.00.2195.2862 98.77 KB (101,136 bytes) 8/15/2002 14:12:36 Microsoft Corporation c:\winnt\system32\ntmarta.dll
ntevt.dll 1.50.1085.0000 192.06 KB (196,669 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\wbem\ntevt.dll
psapi.dll 5.00.2134.1 28.27 KB (28,944 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\psapi.dll
framedyn.dll 1.50.1085.0000 164.05 KB (167,992 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\wbem\framedyn.dll
cimwin32.dll 1.50.1085.0038 1.02 MB (1,073,232 bytes) 8/15/2002 14:12:47 Microsoft Corporation c:\winnt\system32\wbem\cimwin32.dll
adsldp.dll 5.00.2195.2778 119.77 KB (122,640 bytes) 8/15/2002 14:12:19 Microsoft Corporation c:\winnt\system32\adsldp.dll
provthrd.dll 1.50.1085.0000 68.07 KB (69,708 bytes) 8/14/2002 15:42:41 Microsoft Corporation c:\winnt\system32\wbem\provthrd.dll
dsprov.dll 1.50.1085.0000 196.06 KB (200,761 bytes) 8/14/2002 15:42:42 Microsoft Corporation c:\winnt\system32\wbem\dsprov.dll
mofd.dll 1.50.1085.0007 136.07 KB (139,332 bytes) 8/15/2002 14:12:47 Microsoft Corporation c:\winnt\system32\wbem\mofd.dll
wmiprov.dll 1.50.1085.0032 108.07 KB (110,660 bytes) 8/15/2002 14:12:48 Microsoft Corporation c:\winnt\system32\wbem\wmiprov.dll
wbemess.dll 1.50.1085.0039 364.07 KB (372,804 bytes) 8/15/2002 14:12:48 Microsoft Corporation c:\winnt\system32\wbem\wbemess.dll
wbemcore.dll 1.50.1085.0036 628.07 KB (643,140 bytes) 8/15/2002 14:12:48 Microsoft Corporation c:\winnt\system32\wbem\wbemcore.dll
winmgmt.exe 1.50.1085.0029 192.08 KB (196,685 bytes) 8/15/2002 14:12:48 Microsoft Corporation c:\winnt\system32\wbem\winmgmt.exe
fastprox.dll 1.50.1085.0037 144.08 KB (147,536 bytes) 8/15/2002 14:12:47 Microsoft Corporation c:\winnt\system32\wbem\fastprox.dll
wbemsvc.dll 1.50.1085.0007 40.07 KB (41,036 bytes) 8/15/2002 14:12:48 Microsoft Corporation c:\winnt\system32\wbem\wbemsvc.dll
wbemcomn.dll 1.50.1085.0021 692.07 KB (708,675 bytes) 8/15/2002 14:12:47 Microsoft Corporation c:\winnt\system32\wbem\wbemcomn.dll
wbemprox.dll 1.50.1085.0045 40.08 KB (41,040 bytes) 8/15/2002 14:12:48 Microsoft Corporation c:\winnt\system32\wbem\wbemprox.dll
mlang.dll 5.00.3103.1000 510.77 KB (523,024 bytes) 8/15/2002 14:12:29 Microsoft Corporation c:\winnt\system32\mlang.dll
cabinet.dll 5.00.2147.1 54.77 KB (56,080 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\cabinet.dll
msinfo32.dll 5.00.2177.1 312.27 KB (319,760 bytes) 8/14/2002 15:42:50 Microsoft Corporation c:\program files\common files\microsoft shared\msinfo\msinfo32.dll
comdlg32.dll 5.00.3103.1000 236.77 KB (242,448 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\comdlg32.dll
mmcndmgr.dll 5.00.2178.1 815.27 KB (834,832 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\mmcndmgr.dll
mmc.exe 5.00.2195.2301 589.27 KB (603,408 bytes) 8/15/2002 14:12:29 Microsoft Corporation c:\winnt\system32\mmc.exe
internat.exe 5.00.2920.0000 20.27 KB (20,752 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\internat.exe
shdoclc.dll 5.00.3315.2879 324.50 KB (332,288 bytes) 8/15/2002 14:12:41 Microsoft Corporation c:\winnt\system32\shdoclc.dll
wininet.dll 5.00.3315.1000 456.77 KB (467,728 bytes) 8/15/2002 14:12:44 Microsoft Corporation c:\winnt\system32\wininet.dll
linkinfo.dll 5.00.2134.1 15.77 KB (16,144 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\linkinfo.dll
indicdll.dll 5.00.2920.0000 11.27 KB (11,536 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\indicdll.dll
msi.dll 1.11.2405.0 1.69 MB (1,767,184 bytes) 8/15/2002 14:12:31 Microsoft Corporation c:\winnt\system32\msi.dll
powrprof.dll 5.00.3103.1000 13.27 KB (13,584 bytes) 8/15/2002 14:12:39 Microsoft Corporation c:\winnt\system32\powrprof.dll
batmeter.dll 5.00.3103.1000 20.27 KB (20,752 bytes) 8/15/2002 14:12:20 Microsoft Corporation c:\winnt\system32\batmeter.dll
stobject.dll 5.00.2195.2780 79.27 KB (81,168 bytes) 8/15/2002 14:12:42 Microsoft Corporation c:\winnt\system32\stobject.dll
webcheck.dll 5.00.3315.1000 251.77 KB (257,808 bytes) 8/15/2002 14:12:43 Microsoft Corporation c:\winnt\system32\webcheck.dll
netui1.dll 5.00.2134.1 210.27 KB (215,312 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\netui1.dll
netui0.dll 5.00.2134.1 70.27 KB (71,952 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\netui0.dll
ntlanman.dll 5.00.2157.1 35.27 KB (36,112 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\ntlanman.dll
ntshrui.dll 5.00.2134.1 46.77 KB (47,888 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\ntshrui.dll
mydocs.dll 5.00.2920.0000 55.77 KB (57,104 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\mydocs.dll
browseui.dll 5.00.3315.2846 788.77 KB (807,696 bytes) 8/15/2002 14:12:20 Microsoft Corporation c:\winnt\system32\browseui.dll
shdocvw.dll 5.00.3315.2879 1.05 MB (1,104,144 bytes) 8/15/2002 14:12:41 Microsoft Corporation c:\winnt\system32\shdocvw.dll
explorer.exe 5.00.3315.2846 237.27 KB (242,960 bytes) 8/15/2002 14:12:44 Microsoft Corporation c:\winnt\explorer.exe
dfssvc.exe 5.00.2195.2841 88.27 KB (90,384 bytes) 8/15/2002 14:12:24 Microsoft Corporation c:\winnt\system32\dfssvc.exe
iislog.dll 5.00.0984 75.27 KB (77,072 bytes) 8/15/2002 14:13:24 Microsoft Corporation c:\winnt\system32\inetsrv\iislog.dll
ntfsdrv.dll 5.00.0984 36.77 KB (37,648 bytes) 8/15/2002 14:13:25 Microsoft Corporation c:\winnt\system32\inetsrv\ntfsdrv.dll
ntlsapi.dll 5.00.2134.1 6.77 KB (6,928 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\ntlsapi.dll
wshnetbs.dll 5.00.2134.1 7.77 KB (7,952 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\wshnetbs.dll
httpext.dll 0.9.3940.21 435.27 KB (445,712 bytes) 8/15/2002 14:13:24 Microsoft Corporation c:\winnt\system32\inetsrv\httpext.dll
fpexedll.dll 4.0.2.4324 20.06 KB (20,541 bytes) 8/15/2002 14:13:17 Microsoft Corporation c:\program files\common files\microsoft shared\web server extensions\40\bin\fpexedll.dll
md5filt.dll 5.00.0984 32.77 KB (33,552 bytes) 8/15/2002 14:13:25 Microsoft Corporation c:\winnt\system32\inetsrv\md5filt.dll

aqueue.dll 5.00.0984 312.77 KB (320,272 bytes) 8/15/2002 14:13:18 Microsoft Corporation c:\winnt\system32\inetsrv\aqueue.dll
gzip.dll 5.00.0984 30.27 KB (30,992 bytes) 8/15/2002 14:13:24 Microsoft Corporation c:\winnt\system32\inetsrv\gzip.dll
compfilt.dll 5.00.0984 22.77 KB (23,312 bytes) 8/15/2002 14:13:23 Microsoft Corporation c:\winnt\system32\inetsrv\compfilt.dll
seo.dll 5.00.0984 229.27 KB (234,768 bytes) 8/15/2002 14:13:25 Microsoft Corporation c:\winnt\system32\inetsrv\seo.dll
sspifilt.dll 5.00.0984 43.27 KB (44,304 bytes) 8/15/2002 14:13:26 Microsoft Corporation c:\winnt\system32\inetsrv\sspifilt.dll
iscomlog.dll 5.00.0984 24.77 KB (25,360 bytes) 8/15/2002 14:13:24 Microsoft Corporation c:\winnt\system32\inetsrv\iscomlog.dll
lonsint.dll 5.00.0984 11.77 KB (12,048 bytes) 8/15/2002 14:13:25 Microsoft Corporation c:\winnt\system32\inetsrv\lonsint.dll
inetsloc.dll 5.00.0984 20.27 KB (20,752 bytes) 8/15/2002 14:12:28 Microsoft Corporation c:\winnt\system32\inetsloc.dll
w3svc.dll 5.00.0984 343.27 KB (351,504 bytes) 8/15/2002 14:13:26 Microsoft Corporation c:\winnt\system32\inetsrv\w3svc.dll
staxmem.dll 5.00.0984 8.27 KB (8,464 bytes) 8/15/2002 0:39:01 Microsoft Corporation c:\winnt\system32\staxmem.dll
exstrace.dll 5.00.0984 13.77 KB (14,096 bytes) 8/15/2002 0:39:03 Microsoft Corporation c:\winnt\system32\exstrace.dll
rwnh.dll 5.00.0984 10.77 KB (11,024 bytes) 8/15/2002 0:40:24 Microsoft Corporation c:\winnt\system32\rwnh.dll
fcachdll.dll 5.00.0984 43.77 KB (44,816 bytes) 8/15/2002 0:40:24 Microsoft Corporation c:\winnt\system32\fcachdll.dll
iisfecnv.dll 5.00.0984 7.27 KB (7,440 bytes) 8/15/2002 0:39:01 Microsoft Corporation c:\winnt\system32\inetsrv\iisfecnv.dll
isatq.dll 5.00.0984 60.27 KB (61,712 bytes) 8/15/2002 14:13:24 Microsoft Corporation c:\winnt\system32\inetsrv\isatq.dll
infocomm.dll 5.00.0984 238.27 KB (243,984 bytes) 8/15/2002 14:13:24 Microsoft Corporation c:\winnt\system32\inetsrv\infocomm.dll
smtpsvc.dll 5.00.0984 420.27 KB (430,352 bytes) 8/15/2002 14:13:25 Microsoft Corporation c:\winnt\system32\inetsrv\smtpsvc.dll
security.dll 5.00.2154.1 5.77 KB (5,904 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\security.dll
svcext.dll 5.00.0984 39.77 KB (40,720 bytes) 8/15/2002 14:13:26 Microsoft Corporation c:\winnt\system32\inetsrv\svcext.dll
admexs.dll 5.00.0984 27.77 KB (28,432 bytes) 8/15/2002 14:13:23 Microsoft Corporation c:\winnt\system32\inetsrv\admexs.dll
wamreg.dll 5.00.0984 45.77 KB (46,864 bytes) 8/15/2002 14:13:26 Microsoft Corporation c:\winnt\system32\inetsrv\wamreg.dll
metadata.dll 5.00.0984 68.77 KB (70,416 bytes) 8/15/2002 14:13:25 Microsoft Corporation c:\winnt\system32\inetsrv\metadata.dll
iismap.dll 5.00.0984 55.77 KB (57,104 bytes) 8/15/2002 14:12:27 Microsoft Corporation c:\winnt\system32\iismap.dll
nsepm.dll 5.00.0984 43.27 KB (44,304 bytes) 8/15/2002 14:13:25 Microsoft Corporation c:\winnt\system32\inetsrv\nsepm.dll

admwprox.dll 5.00.0984 31.77 KB (32,528 bytes) 8/15/2002 0:39:02 Microsoft Corporation c:\winnt\system32\admwprox.dll
coadmin.dll 5.00.0984 39.27 KB (40,208 bytes) 8/15/2002 14:13:23 Microsoft Corporation c:\winnt\system32\inetsrv\coadmin.dll
iisadmin.dll 5.00.0984 15.27 KB (15,632 bytes) 8/15/2002 14:13:24 Microsoft Corporation c:\winnt\system32\inetsrv\iisadmin.dll
rpcref.dll 5.00.0984 4.27 KB (4,368 bytes) 8/15/2002 14:13:25 Microsoft Corporation c:\winnt\system32\inetsrv\rpcref.dll
iisrtl.dll 5.00.0984 119.77 KB (122,640 bytes) 8/15/2002 14:12:27 Microsoft Corporation c:\winnt\system32\iisrtl.dll
inetinfo.exe 5.00.0984 14.27 KB (14,608 bytes) 8/15/2002 14:13:24 Microsoft Corporation c:\winnt\system32\inetsrv\inetinfo.exe
msidle.dll 5.00.2920.0000 6.27 KB (6,416 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\msidle.dll
mstask.exe 4.71.2195.1 115.27 KB (118,032 bytes) 8/15/2002 14:12:34 Microsoft Corporation c:\winnt\system32\mstask.exe
regsvc.exe 5.00.2195.2104 65.27 KB (66,832 bytes) 8/15/2002 14:12:39 Microsoft Corporation c:\winnt\system32\regsvc.exe
llsrpc.dll 5.00.2149.1 45.77 KB (46,864 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\llsrpc.dll
llssrv.exe 5.00.2195.2649 114.27 KB (117,008 bytes) 5/4/2001 12:05:02 Microsoft Corporation c:\winnt\system32\llssrv.exe
rasdlg.dll 5.00.2195.2671 514.27 KB (526,608 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\rasdlg.dll
netcfgx.dll 5.00.2195.2228 534.77 KB (547,600 bytes) 8/15/2002 14:12:35 Microsoft Corporation c:\winnt\system32\netcfgx.dll
rasmans.dll 5.00.2195.2728 147.27 KB (150,800 bytes) 8/15/2002 14:12:39 Microsoft Corporation c:\winnt\system32\rasmans.dll
wmi.dll 5.00.2191.1 6.27 KB (6,416 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\wmi.dll
netshell.dll 5.00.2195.2779 457.27 KB (468,240 bytes) 8/15/2002 14:12:35 Microsoft Corporation c:\winnt\system32\netshell.dll
netman.dll 5.00.2195.2779 89.27 KB (91,408 bytes) 8/15/2002 14:12:35 Microsoft Corporation c:\winnt\system32\netman.dll
ntmsdba.dll 5.00.2195.2779 167.27 KB (171,280 bytes) 8/15/2002 14:12:36 Microsoft Corporation c:\winnt\system32\ntmsdba.dll
sens.dll 5.00.2163.1 36.77 KB (37,648 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\sens.dll
ntmssvc.dll 5.00.2195.2779 391.27 KB (400,656 bytes) 8/15/2002 14:12:36 Microsoft Corporation c:\winnt\system32\ntmssvc.dll
es.dll 2000.2.3471.1 222.27 KB (227,600 bytes) 8/15/2002 14:12:25 Microsoft Corporation c:\winnt\system32\es.dll
mtxoci.dll 2000.2.3471.1 101.77 KB (104,208 bytes) 8/15/2002 14:12:35 Microsoft Corporation c:\winnt\system32\mtxoci.dll

resutils.dll 5.00.2195.2787 39.77 KB (40,720 bytes) 8/15/2002 14:12:39 Microsoft Corporation c:\winnt\system32\resutils.dll
clusapi.dll 5.00.2195.2104 54.27 KB (55,568 bytes) 8/15/2002 14:12:22 Microsoft Corporation c:\winnt\system32\clusapi.dll
msvcp50.dll 5.00.7051 552.50 KB (565,760 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\msvcp50.dll
xolehlp.dll 1999.9.3421.3 17.27 KB (17,680 bytes) 8/15/2002 0:38:24 Microsoft Corporation c:\winnt\system32\xolehlp.dll
msdtclog.dll 1999.9.3421.3 89.77 KB (91,920 bytes) 8/15/2002 0:38:24 Microsoft Corporation c:\winnt\system32\msdtclog.dll
mtxclu.dll 2000.2.3471.1 51.27 KB (52,496 bytes) 8/15/2002 14:12:35 Microsoft Corporation c:\winnt\system32\mtxclu.dll
msdtcprx.dll 2000.2.3471.1 665.77 KB (681,744 bytes) 8/15/2002 14:12:30 Microsoft Corporation c:\winnt\system32\msdtcprx.dll
txfaux.dll 2000.2.3471.1 374.27 KB (383,248 bytes) 8/15/2002 14:12:43 Microsoft Corporation c:\winnt\system32\txfaux.dll
msdtctm.dll 2000.2.3471.1 1.07 MB (1,120,528 bytes) 8/15/2002 14:12:30 Microsoft Corporation c:\winnt\system32\msdtctm.dll
msdtc.exe 1999.9.3421.3 6.77 KB (6,928 bytes) 8/15/2002 0:38:24 Microsoft Corporation c:\winnt\system32\msdtc.exe
inetpp.dll 5.00.2195.2842 65.27 KB (66,832 bytes) 8/15/2002 14:12:27 Microsoft Corporation c:\winnt\system32\inetpp.dll
win32spl.dll 5.00.2195.2780 92.27 KB (94,480 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\win32spl.dll
usbmon.dll 5.00.2195.2780 11.27 KB (11,536 bytes) 8/15/2002 14:12:43 Microsoft Corporation c:\winnt\system32\usbmon.dll
tcpmon.dll 5.00.2195.2780 40.77 KB (41,744 bytes) 8/15/2002 14:12:42 Microsoft Corporation c:\winnt\system32\tcpmon.dll
pjlmon.dll 5.00.2165.1 12.77 KB (13,072 bytes) 12/1/1999 8:39:36 Microsoft Corporation c:\winnt\system32\pjlmon.dll
cnbjmon.dll 5.00.2134.1 43.77 KB (44,816 bytes) 12/1/1999 8:38:48 Microsoft Corporation c:\winnt\system32\cnbjmon.dll
localspl.dll 5.00.2195.2793 246.77 KB (252,688 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\localspl.dll
spoolss.dll 5.00.2161.1 61.77 KB (63,248 bytes) 8/15/2002 0:25:24 Microsoft Corporation c:\winnt\system32\spoolss.dll
spoolsv.exe 5.00.2161.1 43.77 KB (44,816 bytes) 8/15/2002 0:25:24 Microsoft Corporation c:\winnt\system32\spoolsv.exe
rpcss.dll 5.00.2195.2815 231.27 KB (236,816 bytes) 8/15/2002 14:12:40 Microsoft Corporation c:\winnt\system32\rpcss.dll
svchost.exe 5.00.2134.1 7.77 KB (7,952 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\svchost.exe

dssenh.dll 5.00.2195.2228 142.77 KB (146,192 bytes) 8/15/2002 14:13:20 Microsoft Corporation c:\winnt\system32\dssenh.dll
oakley.dll 5.00.2195.2785 378.77 KB (387,856 bytes) 8/15/2002 14:12:36 Microsoft Corporation c:\winnt\system32\oakley.dll
mfc42u.dll 6.00.8665.0 972.05 KB (995,384 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\mfc42u.dll
polagent.dll 5.00.2183.1 108.27 KB (110,864 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\polagent.dll
scecli.dll 5.00.2195.2780 105.27 KB (107,792 bytes) 8/15/2002 14:12:40 Microsoft Corporation c:\winnt\system32\scecli.dll
atl.dll 3.00.8449 57.56 KB (58,938 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\atl.dll
certcli.dll 5.00.2195.2778 130.77 KB (133,904 bytes) 8/15/2002 14:12:22 Microsoft Corporation c:\winnt\system32\certcli.dll
esent.dll 6.0.3940.13 1.08 MB (1,135,376 bytes) 8/15/2002 14:12:26 Microsoft Corporation c:\winnt\system32\esent.dll
ntdsatq.dll 5.00.2195.2878 31.27 KB (32,016 bytes) 8/15/2002 14:12:36 Microsoft Corporation c:\winnt\system32\ntdsatq.dll
ntdsa.dll 5.00.2195.2899 990.77 KB (1,014,544 bytes) 8/15/2002 14:12:35 Microsoft Corporation c:\winnt\system32\ntdsa.dll
kdcsvc.dll 5.00.2195.2878 137.77 KB (141,072 bytes) 8/15/2002 14:12:29 Microsoft Corporation c:\winnt\system32\kdcsvc.dll
sfmapi.dll 5.00.2134.1 38.77 KB (39,696 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\sfmapi.dll
rassfm.dll 5.00.2195.2671 21.27 KB (21,776 bytes) 8/15/2002 14:12:39 Microsoft Corporation c:\winnt\system32\rassfm.dll
mpr.dll 5.00.2195.2779 53.27 KB (54,544 bytes) 8/15/2002 14:12:29 Microsoft Corporation c:\winnt\system32\mpr.dll
rsabase.dll 5.00.2195.2228 128.27 KB (131,344 bytes) 5/4/2001 12:05:02 Microsoft Corporation c:\winnt\system32\rsabase.dll
schannel.dll 5.00.2195.2922 138.27 KB (141,584 bytes) 5/4/2001 12:05:02 Microsoft Corporation c:\winnt\system32\schannel.dll
netlogon.dll 5.00.2195.2865 357.77 KB (366,352 bytes) 8/15/2002 14:12:35 Microsoft Corporation c:\winnt\system32\netlogon.dll
msv1_0.dll 5.00.2195.2900 111.77 KB (114,448 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\msv1_0.dll
kerberos.dll 5.00.2195.2913 198.77 KB (203,536 bytes) 8/15/2002 14:12:29 Microsoft Corporation c:\winnt\system32\kerberos.dll
msprivs.dll 5.00.2154.1 41.50 KB (42,496 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\msprivs.dll
samsrv.dll 5.00.2195.2918 369.77 KB (378,640 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\samsrv.dll
lsasrv.dll 5.00.2195.2964 492.77 KB (504,592 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\lsasrv.dll
lsass.exe 5.00.2195.2964 32.77 KB (33,552 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\lsass.exe
wmicore.dll 5.00.2195.2842 72.27 KB (74,000 bytes) 8/15/2002 14:12:44 Microsoft Corporation c:\winnt\system32\wmicore.dll
rasadhlp.dll 5.00.2168.1 7.27 KB (7,440 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\rasadhlp.dll
winrnr.dll 5.00.2160.1 18.77 KB (19,216 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\winrnr.dll
rnr20.dll 5.00.2195.2871 35.77 KB (36,624 bytes) 8/15/2002 14:12:40 Microsoft Corporation c:\winnt\system32\rnr20.dll
wshtcpip.dll 5.00.2195.2104 17.27 KB (17,680 bytes) 8/15/2002 14:12:44 Microsoft Corporation c:\winnt\system32\wshtcpip.dll
msafd.dll 5.00.2195.2779 106.77 KB (109,328 bytes) 8/15/2002 14:12:30 Microsoft Corporation c:\winnt\system32\msafd.dll
mswsock.dll 5.00.2195.2871 62.77 KB (64,272 bytes) 8/15/2002 14:12:34 Microsoft Corporation c:\winnt\system32\mswsock.dll
msgsvc.dll 5.00.2195.2939 34.27 KB (35,088 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\msgsvc.dll
browser.dll 5.00.2195.2778 48.27 KB (49,424 bytes) 8/15/2002 14:12:20 Microsoft Corporation c:\winnt\system32\browser.dll
alrsvc.dll 5.00.2134.1 17.77 KB (18,192 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\alrsvc.dll
trkwks.dll 5.00.2166.1 88.77 KB (90,896 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\trkwks.dll
seclogon.dll 5.00.2135.1 15.77 KB (16,144 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\seclogon.dll
psbase.dll 5.00.2195.2779 111.77 KB (114,448 bytes) 8/15/2002 14:12:39 Microsoft Corporation c:\winnt\system32\psbase.dll
cryptsvc.dll 5.00.2181.1 61.77 KB (63,248 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\cryptsvc.dll
cryptdll.dll 5.00.2135.1 41.27 KB (42,256 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\cryptdll.dll
wkssvc.dll 5.00.2195.2780 95.27 KB (97,552 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\wkssvc.dll
srvsvc.dll 5.00.2195.2904 79.27 KB (81,168 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\srvsvc.dll
cfgmgr32.dll 5.00.2134.1 16.77 KB (17,168 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\cfgmgr32.dll
dmserver.dll 2195.2778.297.3 11.77 KB (12,048 bytes) 8/15/2002 14:12:24 VERITAS Software Corp. c:\winnt\system32\dmserver.dll
winsta.dll 5.00.2195.2386 36.77 KB (37,648 bytes) 8/15/2002 14:12:44 Microsoft Corporation c:\winnt\system32\winsta.dll
lmhsvc.dll 5.00.2195.2778 9.77 KB (10,000 bytes)12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\lmhsvc.dll
dnsrslvr.dll 5.00.2195.2778 88.77 KB (90,896 bytes) 8/15/2002 14:12:25 Microsoft Corporation c:\winnt\system32\dnsrslvr.dll
tapi32.dll 5.00.2182.1 123.27 KB (126,224 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\tapi32.dll
rasman.dll 5.00.2195.2780 54.77 KB (56,080 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\rasman.dll
rasapi32.dll 5.00.2195.2671 189.77 KB (194,320 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\rasapi32.dll
rtutils.dll 5.00.2168.1 43.77 KB (44,816 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\rtutils.dll
adsldpc.dll 5.00.2195.2842 127.27 KB (130,320 bytes) 8/15/2002 14:12:19 Microsoft Corporation c:\winnt\system32\adsldpc.dll
activeds.dll 5.00.2195.2778 174.77 KB (178,960 bytes) 8/15/2002 14:12:16 Microsoft Corporation c:\winnt\system32\activeds.dll
mprapi.dll 5.00.2181.1 79.27 KB (81,168 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\mprapi.dll
iphlpapi.dll 5.00.2173.2 67.77 KB (69,392 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\iphlpapi.dll
icmp.dll 5.00.2134.1 7.27 KB (7,440 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\icmp.dll
dhcpcsvc.dll 5.00.2195.2778 88.77 KB (90,896 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\dhcpcsvc.dll
eventlog.dll 5.00.2178.1 43.77 KB (44,816 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\eventlog.dll
ntdsapi.dll 5.00.2195.2661 55.77 KB (57,104 bytes) 8/15/2002 14:12:36 Microsoft Corporation c:\winnt\system32\ntdsapi.dll
scesrv.dll 5.00.2195.2780 226.27 KB (231,696 bytes) 8/15/2002 14:12:40 Microsoft Corporation c:\winnt\system32\scesrv.dll
umpnpmgr.dll 5.00.2182.1 86.27 KB (88,336 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\umpnpmgr.dll
services.exe 5.00.2195.2780 86.77 KB (88,848 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\services.exe
clbcatq.dll 2000.2.3471.1 496.77 KB (508,688 bytes) 8/15/2002 14:12:22 Microsoft Corporation c:\winnt\system32\clbcatq.dll
oleaut32.dll 2.40.4517 612.27 KB (626,960 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\oleaut32.dll

cscui.dll 5.00.2195.2959 228.27 KB (233,744 bytes) 8/15/2002 14:12:23 Microsoft Corporation c:\winnt\system32\cscui.dll
winspool.drv 5.00.2195.2780 109.77 KB (112,400 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\winspool.drv
winscard.dll 5.00.2134.1 77.27 KB (79,120 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\winscard.dll
wlnotify.dll 5.00.2195.2780 53.77 KB (55,056 bytes) 8/15/2002 14:12:44 Microsoft Corporation c:\winnt\system32\wlnotify.dll
cscdll.dll 5.00.2195.2401 98.27 KB (100,624 bytes) 8/15/2002 14:12:23 Microsoft Corporation c:\winnt\system32\cscdll.dll
lz32.dll 5.00.2134.1 9.77 KB (10,000 bytes)12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\lz32.dll
version.dll 5.00.2134.1 15.77 KB (16,144 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\version.dll
rsaenh.dll 5.00.2195.2228 130.77 KB (133,904 bytes) 8/15/2002 14:13:20 Microsoft Corporation c:\winnt\system32\rsaenh.dll
mscat32.dll 5.131.2134.1 7.77 KB (7,952 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\mscat32.dll
ole32.dll 5.00.2195.2887 969.77 KB (993,040 bytes) 8/15/2002 14:12:38 Microsoft Corporation c:\winnt\system32\ole32.dll
imagehlp.dll 5.00.2195.2778 125.77 KB (128,784 bytes) 5/4/2001 12:05:02 Microsoft Corporation c:\winnt\system32\imagehlp.dll
msasn1.dll 5.00.2134.1 51.27 KB (52,496 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\msasn1.dll
crypt32.dll 5.131.2195.2833 451.27 KB (462,096 bytes) 8/15/2002 14:12:23 Microsoft Corporation c:\winnt\system32\crypt32.dll
wintrust.dll 5.131.2195.2779 162.27 KB (166,160 bytes) 8/15/2002 14:12:44 Microsoft Corporation c:\winnt\system32\wintrust.dll
setupapi.dll 5.00.2195.2663 555.77 KB (569,104 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\setupapi.dll
winmm.dll 5.00.2161.1 184.77 KB (189,200 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\winmm.dll
comctl32.dll 5.81 537.77 KB (550,672 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\comctl32.dll
shlwapi.dll 5.00.3315.1000 282.77 KB (289,552 bytes) 8/15/2002 14:12:41 Microsoft Corporation c:\winnt\system32\shlwapi.dll
shell32.dll 5.00.3315.2902 2.25 MB (2,359,056 bytes) 8/15/2002 14:12:41 Microsoft Corporation c:\winnt\system32\shell32.dll
msgina.dll 5.00.2195.2779 324.27 KB (332,048 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\msgina.dll
imm32.dll 5.00.2195.2821 94.27 KB (96,528 bytes) 8/15/2002 14:12:27 Microsoft Corporation c:\winnt\system32\imm32.dll
wsock32.dll 5.00.2195.2871 21.27 KB (21,776 bytes) 8/15/2002 14:12:44 Microsoft Corporation c:\winnt\system32\wsock32.dll
dnsapi.dll 5.00.2195.2785 130.77 KB (133,904 bytes) 8/15/2002 14:12:24 Microsoft Corporation c:\winnt\system32\dnsapi.dll
wldap32.dll 5.00.2195.2797 125.27 KB (128,272 bytes) 8/15/2002 14:12:44 Microsoft Corporation c:\winnt\system32\wldap32.dll
ws2help.dll 5.00.2134.1 17.77 KB (18,192 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\ws2help.dll
ws2_32.dll 5.00.2195.2780 67.77 KB (69,392 bytes) 8/15/2002 14:12:44 Microsoft Corporation c:\winnt\system32\ws2_32.dll
samlib.dll 5.00.2195.2780 49.77 KB (50,960 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\samlib.dll
netrap.dll 5.00.2134.1 11.27 KB (11,536 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\netrap.dll
netapi32.dll 5.00.2195.2808 303.77 KB (311,056 bytes) 8/15/2002 14:12:35 Microsoft Corporation c:\winnt\system32\netapi32.dll
profmap.dll 5.00.2181.1 29.27 KB (29,968 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\profmap.dll
secur32.dll 5.00.2195.2862 46.77 KB (47,888 bytes) 8/15/2002 14:12:40 Microsoft Corporation c:\winnt\system32\secur32.dll
sfc.dll 5.00.2195.2896 92.11 KB (94,320 bytes) 8/15/2002 14:12:40 Microsoft Corporation c:\winnt\system32\sfc.dll
nddeapi.dll 5.00.2137.1 15.27 KB (15,632 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\nddeapi.dll
userenv.dll 5.00.2195.2780 361.77 KB (370,448 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\userenv.dll
user32.dll 5.00.2195.2821 392.77 KB (402,192 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\user32.dll
gdi32.dll 5.00.2195.2778 228.77 KB (234,256 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\gdi32.dll
rpcrt4.dll 5.00.2195.2832 437.27 KB (447,760 bytes) 8/15/2002 14:12:40 Microsoft Corporation c:\winnt\system32\rpcrt4.dll
advapi32.dll 5.00.2195.2867 351.77 KB (360,208 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\advapi32.dll
kernel32.dll 5.00.2195.2778 714.77 KB (731,920 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\kernel32.dll
msvcrt.dll 6.10.8924.0 284.05 KB (290,869 bytes) 5/4/2001 12:05:02 Microsoft Corporation c:\winnt\system32\msvcrt.dll
winlogon.exe 5.00.2195.2953 173.77 KB (177,936 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\winlogon.exe
sfcfiles.dll 5.00.2195.2967 948.27 KB (971,024 bytes) 8/15/2002 14:12:40 Microsoft Corporation c:\winnt\system32\sfcfiles.dll
ntdll.dll 5.00.2195.2779 478.77 KB (490,256 bytes) 5/4/2001 12:05:02 Microsoft Corporation c:\winnt\system32\ntdll.dll
smss.exe 5.00.2195.2901 44.27 KB (45,328 bytes) 12/8/1999 5:00:00 Microsoft Corporation c:\winnt\system32\smss.exe

[Services]

Display Name	Name	State	Start Mode	Service Type	Path	Error Control	Start Name	Tag ID
Alerter	Alerter	Running	Auto	Share Process	c:\winnt\system32\services.exe	Normal	LocalSystem	0
Application Management	AppMgmt	Stopped	Manual	Share Process	c:\winnt\system32\services.exe	Normal	LocalSystem	0
Computer Browser	Browser	Running	Auto	Share Process	c:\winnt\system32\services.exe	Normal	LocalSystem	0
Indexing Service	cisvc	Stopped	Manual	Share Process	c:\winnt\system32\cisvc.exe	Normal	LocalSystem	0
ClipBook	ClipSrv	Stopped	Manual	Own Process	c:\winnt\system32\clipsrv.exe	Normal	LocalSystem	0
Distributed File System	Dfs	Running	Auto	Own Process	c:\winnt\system32\dfssvc.exe	Normal	LocalSystem	0
DHCP Client	Dhcp	Running	Auto	Share Process	c:\winnt\system32\services.exe	Normal	LocalSystem	0
Logical Disk Manager Administrative Service	dmadmin	Stopped	Manual	Share Process	c:\winnt\system32\dmadmin.exe /com	Normal	LocalSystem	0
Logical Disk Manager	dmserver	Running	Auto	Share Process	c:\winnt\system32\services.exe	Normal	LocalSystem	0
DNS Client	Dnscache	Running	Auto	Share Process	c:\winnt\system32\services.exe	Normal	LocalSystem	0
Event Log	Eventlog	Running	Auto	Share Process	c:\winnt\system32\services.exe	Normal	LocalSystem	0
COM+ Event System	EventSystem	Running	Manual	Share Process	c:\winnt\system32\svchost.exe -k netsvcs	Normal	LocalSystem	0
Fax Service	Fax	Stopped	Manual	Own Process	c:\winnt\system32\faxsvc.exe	Normal	LocalSystem	0
IIS Admin Service	IISADMIN	Running	Auto	Share Process	c:\winnt\system32\inetsrv\inetinfo.exe	Normal	LocalSystem	0
Intersite Messaging	IsmServ	Stopped	Disabled	Own Process	c:\winnt\system32\ismserv.exe	Normal	LocalSystem	0

```
Kerberos Key Distribution Center kdc Stopped Disabled
        Share Process c:\winnt\system32\lsass.exe
        Normal LocalSystem 0
Server lanmanserver Running Auto Share
Process c:\winnt\system32\services.exe Normal
        LocalSystem 0
Workstation lanmanworkstation Running Auto
        Share Process c:\winnt\system32\services.exe
        Normal LocalSystem 0
License Logging Service LicenseService Running
        Auto Own Process
        c:\winnt\system32\llssrv.exe Normal
        LocalSystem 0
TCP/IP NetBIOS Helper Service LmHosts Running Auto
        Share Process c:\winnt\system32\services.exe
        Normal LocalSystem 0
Messenger Messenger Running Auto Share Process
        c:\winnt\system32\services.exe Normal
        LocalSystem 0
NetMeeting Remote Desktop Sharing mnmsrvc Stopped
        Manual Own Process
        c:\winnt\system32\mnmsrvc.exe Normal
        LocalSystem 0
Distributed Transaction Coordinator MSDTC Running
        Auto Own Process
        c:\winnt\system32\msdtc.exe Normal
        LocalSystem 0
Windows Installer MSIServer Stopped Manual Share
Process c:\winnt\system32\msiexec.exe /v Normal
        LocalSystem 0
Network DDE NetDDE Stopped Manual Share
Process c:\winnt\system32\netdde.exe Normal
        LocalSystem 0
Network DDE DSDM NetDDEdsdm Stopped Manual
        Share Process c:\winnt\system32\netdde.exe
        Normal LocalSystem 0
Net Logon Netlogon Stopped Manual Share Process
        c:\winnt\system32\lsass.exe Normal
        LocalSystem 0
Network Connections Netman Running Manual Share
Process c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
File Replication NtFrs Stopped Manual Own
Process c:\winnt\system32\ntfrs.exe Ignore
        LocalSystem 0
NT LM Security Support Provider NtLmSsp Stopped Manual
        Share Process c:\winnt\system32\lsass.exe
        Normal LocalSystem 0
Removable Storage NtmsSvc Running Auto Share
Process c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Plug and Play PlugPlay Running Auto Share
Process c:\winnt\system32\services.exe Normal
        LocalSystem 0
IPSEC Policy Agent PolicyAgent Running Auto
        Share Process c:\winnt\system32\lsass.exe
        Normal LocalSystem 0
Protected Storage ProtectedStorage Running Auto
        Share Process c:\winnt\system32\services.exe
        Normal LocalSystem 0
Remote Access Auto Connection Manager RasAuto Stopped
        Manual Share Process
        c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Remote Access Connection Manager RasMan Stopped
        Manual Share Process
        c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Routing and Remote Access RemoteAccess Stopped
        Disabled Share Process
        c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Remote Registry Service RemoteRegistry Running
        Auto Own Process
        c:\winnt\system32\regsvc.exe Normal
        LocalSystem 0
Remote Procedure Call (RPC) Locator RpcLocator
        Stopped Manual Own Process
        c:\winnt\system32\locator.exe Normal
        LocalSystem 0
Remote Procedure Call (RPC) RpcSs Running Auto
        Share Process c:\winnt\system32\svchost -k
rpcss Normal LocalSystem 0
QoS RSVP RSVP Running Manual Own Process
        c:\winnt\system32\rsvp.exe -s Normal
        LocalSystem 0
Security Accounts Manager SamSs Running Auto
        Share Process c:\winnt\system32\lsass.exe
        Normal LocalSystem 0
Smart Card Helper SCardDrv Stopped Manual Share
Process c:\winnt\system32\scardsvr.exe Ignore
        LocalSystem 0
Smart Card SCardSvr Stopped Manual Share Process
        c:\winnt\system32\scardsvr.exe Ignore
        LocalSystem 0
Task Scheduler Schedule Running Auto Share
Process c:\winnt\system32\mstask.exe Normal
        LocalSystem 0
RunAs Service seclogon Running Auto Share
Process c:\winnt\system32\services.exe Ignore
        LocalSystem 0
System Event Notification SENS Running Auto
        Share Process c:\winnt\system32\svchost.exe -k
netsvcs Normal LocalSystem 0
Internet Connection Sharing SharedAccess Stopped
        Manual Share Process
        c:\winnt\system32\svchost.exe -k netsvcs Normal
        LocalSystem 0
Simple Mail Transport Protocol (SMTP) SMTPSVC Running
        Auto Share Process
        c:\winnt\system32\inetsrv\inetinfo.exe Normal
        LocalSystem 0
Print Spooler Spooler Running Auto Own
Process c:\winnt\system32\spoolsv.exe Normal
        LocalSystem 0
Performance Logs and Alerts SysmonLog Stopped
        Manual Own Process
        c:\winnt\system32\smlogsvc.exe Normal
        LocalSystem 0
Telephony TapiSrv Running Manual Share Process
        c:\winnt\system32\svchost.exe -k tapisrv Normal
        LocalSystem 0
Terminal Services TermService Stopped Disabled
        Own Process c:\winnt\system32\termsrv.exe
        Normal LocalSystem 0
Telnet TlntSvr Stopped Manual Own Process
        c:\winnt\system32\tlntsvr.exe Normal
        LocalSystem 0
Distributed Link Tracking Server TrkSvr Stopped Manual
        Share Process c:\winnt\system32\services.exe
        Normal LocalSystem 0
Distributed Link Tracking Client TrkWks Running Auto
        Share Process c:\winnt\system32\services.exe
        Normal LocalSystem 0
Uninterruptible Power Supply UPS Stopped Manual
        Own Process c:\winnt\system32\ups.exe
        Normal LocalSystem 0
Utility Manager UtilMan Stopped Manual Own
Process c:\winnt\system32\utilman.exe Normal
        LocalSystem 0
Windows Time W32Time Stopped Manual Share
Process c:\winnt\system32\services.exe Normal
        LocalSystem 0
World Wide Web Publishing Service W3SVC Running
        Auto Share Process
        c:\winnt\system32\inetsrv\inetinfo.exe Normal
        LocalSystem 0
Windows Management Instrumentation WinMgmt Running
        Auto Own Process
        c:\winnt\system32\wbem\winmgmt.exe Ignore
        LocalSystem 0
Windows Management Instrumentation Driver Extensions Wmi
        Running Manual Share Process
        c:\winnt\system32\services.exe Normal
        LocalSystem 0
```

[Program Groups]

```
Group Name Name User Name
Accessories Default User:Accessories Default
User
Accessories\Accessibility Default
User:Accessories\Accessibility Default User
Accessories\Entertainment Default
User:Accessories\Entertainment Default User
Accessories\System Tools Default User:Accessories\System
Tools Default User
Startup Default User:Startup Default User
Accessories All Users:Accessories All Users
Accessories\Accessibility All
Users:Accessories\Accessibility All Users
Accessories\Communications All
Users:Accessories\Communications All Users
Accessories\Entertainment All
Users:Accessories\Entertainment All Users
Accessories\Games All Users:Accessories\Games All Users
Accessories\Microsoft Script Debugger All
Users:Accessories\Microsoft Script Debugger All Users
Accessories\System Tools All Users:Accessories\System
Tools All Users
Administrative Tools All Users:Administrative Tools All Users
Microsoft SQL Server All Users:Microsoft SQL Server All Users
Startup All Users:Startup All Users
```

Accessories ACL15\Administrator:Accessories
ACL15\Administrator
Accessories\Accessibility
ACL15\Administrator:Accessories\Accessibility
ACL15\Administrator
Accessories\Entertainment
ACL15\Administrator:Accessories\Entertainment
ACL15\Administrator
Accessories\System Tools
ACL15\Administrator:Accessories\System Tools
ACL15\Administrator
Administrative Tools ACL15\Administrator:Administrative Tools
ACL15\Administrator
Startup ACL15\Administrator:Startup ACL15\Administrator

[Startup Programs]

Program Command User Name Location
internat.exe internat.exe ACL15\Administrator
HKU\S-1-5-21-1343024091-1645522239-1417001333-500\SOFTWARE\Microsoft\Windows\CurrentVersion\Run
internat.exe internat.exe .DEFAULT
HKU\.DEFAULT\SOFTWARE\Microsoft\Windows\CurrentVersion\Run

[OLE Registration]

Object Local Server
Sound (OLE2) sndrec32.exe
Media Clip mplay32.exe
Video Clip mplay32.exe /avi
MIDI Sequence mplay32.exe /mid
Sound Not Available
Media Clip Not Available
Image Document "C:\Program Files\Windows NT\Accessories\ImageVue\KodakImg.exe"
WordPad Document "%ProgramFiles%\Windows NT\Accessories\WORDPAD.EXE"
Windows Media Services DRM Storage object Not Available
Bitmap Image mspaint.exe

[Internet Explorer 5]

[Following are sub-categories of this main category]

[Summary]

Item Value
Version 5.00.3315.1000
Build 53315.1000
Product ID 51876-335-3394097-05979
Application Path C:\Program Files\Internet Explorer
Language English (United States)
Active Printer Not Available

Cipher Strength 168-bit
Content Advisor Disabled
IEAK Install No

[File Versions]

File Version Size Date Path Company

advapi32.dll 5.0.2195.2867 352 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
advpack.dll 5.0.3103.1000 87 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
browselc.dll 5.0.3315.2846 35 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
browseui.dll 5.0.3315.2846 789 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
ckcnv.exe 5.0.2189.1 9 KB 12/8/1999 5:00:00 C:\WINNT\system32 Microsoft Corporation
comctl32.dll 5.81.3103.1000 538 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
crypt32.dll 5.131.2195.2833 451 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
enhsig.dll <File Missing> Not Available Not Available
iemigrat.dll <File Missing> Not Available Not Available
iesetup.dll 5.0.3103.1000 57 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
iexplore.exe 5.0.2920.0 59 KB 12/8/1999 5:00:00 C:\Program Files\Internet Explorer Microsoft Corporation
imagehlp.dll 5.0.2195.2778 126 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
imghelp.dll <File Missing> Not Available Not Available
inseng.dll 5.0.3103.1000 72 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
jobexec.dll 5.0.0.1 47 KB 12/8/1999 5:00:00 C:\WINNT\system32 Microsoft Corporation
jscript.dll 5.1.0.5907 476 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
jsproxy.dll 5.0.2920.0 13 KB 12/8/1999 5:00:00 C:\WINNT\system32 Microsoft Corporation
msaahtml.dll <File Missing> Not Available Not Available Not Available
mshtml.dll 5.0.3315.2870 2290 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
msjava.dll 5.0.3802.0 923 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
msoss.dll <File Missing> Not Available Not Available
msxml.dll 8.0.5718.1 493 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
occache.dll 5.0.3103.1000 86 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
ole32.dll 5.0.2195.2887 970 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
oleaut32.dll 2.40.4517.0 612 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
olepro32.dll 5.0.4517.0 160 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
rsabase.dll 5.0.2195.2228 128 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
rsaenh.dll 5.0.2195.2228 131 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
rsapi32.dll <File Missing> Not Available Not Available
rsasig.dll <File Missing> Not Available Not Available

schannel.dll 5.1.2195.0 138 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
shdoc401.dll <File Missing> Not Available Not Available Not Available Not Available
shdocvw.dll 5.0.3315.2879 1078 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
shell32.dll 5.0.3315.2902 2304 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
shlwapi.dll 5.0.3315.1000 283 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
url.dll 5.0.2920.0 82 KB 12/8/1999 5:00:00 C:\WINNT\system32 Microsoft Corporation
urlmon.dll 5.0.3315.1000 441 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
vbscript.dll 5.1.0.5907 428 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
webcheck.dll 5.0.3315.1000 252 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
win.com 5.0.2134.1 24 KB 12/8/1999 5:00:00 C:\WINNT\system32 Microsoft Corporation
wininet.dll 5.0.3315.1000 457 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
winsock.dll 3.10.0.103 3 KB 12/8/1999 5:00:00 C:\WINNT\system32 Microsoft Corporation
wintrust.dll 5.131.2195.2779 162 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
wsock.vxd <File Missing> Not Available Not Available Not Available
wsock32.dll 5.0.2195.2871 21 KB 5/4/2001 12:05:02 C:\WINNT\system32 Microsoft Corporation
wsock32n.dll <File Missing> Not Available Not Available Not Available Not Available

[Connectivity]

Item Value
Connection Preference Never dial
EnableHttp1.1 1
ProxyHttp1.1 0

LAN Settings

AutoConfigProxy wininet.dll
AutoProxyDetectMode Enabled
AutoConfigURL
Proxy Disabled
ProxyServer
ProxyOverride

[Cache]

[Following are sub-categories of this main category]

[Summary]

Item Value
Page Refresh Type Automatic
Temporary Internet Files Folder C:\Documents and Settings\Administrator\Local Settings\Temporary Internet Files
Total Disk Space 17335 MB

Available Disk Space 13993 MB
Maximum Cache Size 541 MB
Available Cache Size 542 MB

[List of Objects]

Program File Status CodeBase
No cached object information available

[Content]

[Following are sub-categories of this main category]

[Summary]

Item Value
Content Advisor Disabled

[Personal Certificates]

Issued To Issued By Validity Signature Algorithm
Administrator Administrator 8/14/2002 to 7/21/2102 sha1RSA

[Other People Certificates]

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

[Publishers]

Name
No publisher information available

[Security]

Zone Security Level
Local intranet Medium-low
Trusted sites Low
Internet Medium
Restricted sites High

<Microsoft SQL Server setting>

Startup Parameters

sqlservr -c -x -T3502 -T3428

-c	Sart SQL Server independently of the Microsoft Windows NT Service Control Manager.
-x	Disable the keeping of CPU time and cache-hit ration statistics.
-T3502	Prints a message to the log at the beginning and end of each checkpoint.
-T3428	Use half of the memory available on the system during the recovery process to keep a hash table which enables recovery to proceed smoothly.

Microsoft SQL Server Configuration Parameters

```
1> 2> 3> 4> 5> 6> 7> 8> 9> 10> 11>
--  File:     VERSION.SQL
--            Microsoft TPC-C Benchmark Kit Ver. IA-64
--            Copyright Microsoft, 2000,2001
--  Purpose:  Returns SQL Server version string



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

 ------------------------------
 Sep  4 2002  9:37:21:960AM

(1 row affected)

1> 2> 3>
select @@version




 ------------------------------------------------------------------------------
        ------------------------------------------------------------------------
        ------------------------------------------------------------------------
        ------------------------------------------------------------------------
        ---------
 Microsoft SQL Server  2000 - 8.00.717 (Intel IA-64)
        Aug 28 2002 14:58:45
        C
        opyright (c) 1988-2002 Microsoft Corporation
        Enterprise Edition (64-bi
        t) on Windows NT 5.2 (Build 3668: )
```

```
(1 row affected)
1> 2>
1> 2> 3> 4> 5> 6> 7> 8> 9> 10>
--  File:     CONFIG.SQL
--            Microsoft TPC-C Benchmark Kit Ver. IA-64
--            Copyright Microsoft, 2000,2001
--  Purpose:  Collects SQL Server configuration parameters


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

 ------------------------------
 Sep  4 2002  9:37:22:310AM

(1 row affected)

1> 2> 3> DBCC execution completed. If DBCC printed error messages, contact your
system administrator.
Configuration option 'show advanced options' changed from 1 to 1. Run the
RECONFIGURE statement to install.

sp_configure "show advanced",1
1> 2> reconfigure with override
1> 2> sp_configure
 name                                minimum     maximum     config_value run_value
 ----------------------------------- ----------- ----------- ------------ ----------
-
 affinity mask                       -2147483648  2147483647   2147483647
2147483647
 affinity64 mask                     -2147483648  2147483647            0
0
 allow updates                                0           1            0
0
 awe enabled                                  0           1            0
0
 c2 audit mode                                0           1            0
0
 cost threshold for parallelism               0       32767            5
5
 cursor threshold                            -1  2147483647           -1          -
1
 default full-text language                   0  2147483647         1033
1033
 default language                             0        9999            0
0
 fill factor (%)                              0         100            0
0
 index create memory (KB)                   704  2147483647            0
0
 lightweight pooling                          0           1            1
1
 locks                                     5000  2147483647            0
0
 max degree of parallelism                    0          32            1
1
 max server memory (MB)                       4  2147483647       250000
250000
 max text repl size (B)                       0  2147483647        65536
65536
 max worker threads                          32       32767          837
837
 media retention                              0         365            0
0
 min memory per query (KB)                  512  2147483647         1024
1024
 min server memory (MB)                       0  2147483647            0
0
 nested triggers                              0           1            1
1
```

```
 network packet size (B)                     512       65536         4096
4096
 open objects                                  0  2147483647            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          119
119
 remote access                                 0           1            1
1
 remote login timeout (s)                      0  2147483647           20
20
 remote proc trans                             0           1            0
0
 remote query timeout (s)                      0  2147483647          600
600
 scan for startup procs                        0           1            0
0
 set working set size                          0           1            0
0
 show advanced options                         0           1            1
1
 two digit year cutoff                      1753        9999         2049
2049
 user connections                              0       32767            0
0
 user options                                  0       32767            0
0

1>
```

<Disk Array configuration>

HBA#	iStorage S2100#	SP#	DEU#	RAID Level	LUN Capacity (GB)	Disk Type (GB) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0	0	0	0	1/0	233.009	36	36	36	36	36	36	36	36	36	36	36	36	36	36	
			1	1/0	233.009	36	36	36	36	36	36	36	36	36	36	36	36	36	36	
1	1	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	2	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
2	3	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	4	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
3	5	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	6	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
4	7	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	8	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
5	9	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	10	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
6	11	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	12	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
7	13	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	14	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
8	15	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	16	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
9	17	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	18	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
10	19	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	20	0	0	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			1	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			2	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
			3	0	249.435	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18

Appendix D : Space Calculation

60 Day Space

Note : Numbers are in KBytes unless otherwise specified

Warehouses	25500	**tpmC**	308620.82	**tpmC/W**	12.10

Table	**Rows**	**Data**	**Index**	**5% Space**	**8H Space**	**Total Space**
Warehouse	25,500	2,760	360	156		3,276
District	255,000	28,736	704	1,472		30,912
Item	100,000	9,528	632	234		10,394
New-order	229,500,000	4,089,088	10,464		2,040,000	6,139,552
History	765,000,000	45,671,648	177,680		7,400,817	53,250,145
Orders	765,000,000	24,979,592	12,186,296		5,999,170	43,165,058
Customer	765,000,000	556,363,640	34,721,104	13,594,949		604,679,693
Order-line	7,649,976,018	509,998,408	1,206,960		82,516,743	593,722,111
Stock	2,550,000,000	816,000,000	1,728,360	18,807,752		836,536,112
Totals		1,957,143,400	50,032,560	32,404,563	97,956,730	2,137,537,253

DB File Group	**Count**	**Size**	**Needed**	**Overhead**	**Not Needed**
MSSQL_misc_fg	80	1,228,800,000	703,284,662	7,032,847	518,482,491
MSSQL_cs_fg	80	2,457,600,000	1,455,627,963	14,556,280	987,415,757
Totals		3,686,400,000	2,158,912,626	21,589,126	1,505,898,248

Dynamic space	564,972,108	Sum of Data for Order, Order-Line and History (excluding free extents)
Static space	1,496,197,542	Data + Index + 5% Space + Overhead - Dynamic space
Free space	119,332,103	Total Seg. Size - Dynamic Space - Static Space - Not Needed
Daily growth	109,403,704	(Dynamic space/W * 62.5)* tpmC
Daily spread	(44,773,453)	Free space - 1.5 * Daily growth (zero if negative)
60 day (KB)	8,060,419,781	Static space + 60 (daily growth + daily spread)
60 day (GB)	7687.02	Excludes OS, Paging and RDBMS Logs
Log size (MB)	400000.00	Total size of log file
% Log used	74.45	% of log file used during entire run
Total N-O Txn	62731599	Total count of N-O transactions during entire run
Log per N-O txn	4.86	Number of Kbytes per New-Order transaction
8 Hour Log (GB)	686.78	need double for mirroring
os, file sys, swap	16.00	

	Disk size (GB)	**Priced Qty**	**Priced (GB)**	**Needed(GB)**	**Extra (GB)**
Database, Sys	16.629	1200	19954.80	7,703.02	12,268.41
	16.629	1	16.63		
Mirrored Log	33.287	56	1864.07	1,373.56	490.51

Appendix E : Price Quotation

CDW The Right Technology. Right Away.™

800 844 4239

SHOPPING CART

- Your Saved Carts - Save This Cart
- Edit Saved Carts - Send To An Associate

YOUR SHOPPING CART :

Continue to Checkout

Quantity	Product	CDW	Usually Ships	Price	Ext. Price
34	AESP CAT5 RJ-45M to RJ-45M Molded 25' Patch cable gray	126706	Same Day	$10.78	$366.52
3	Allied Telesyn AT-8224XL-10	194287	Same Day	$749.00	$2,247.00
6	Allied Telesyn AT-A15/SX module	225694	4-6 Days	$377.42	$2,264.52
33	NEC AccuSync 50	192126	Same Day	$136.99	$4,520.67
13	QLogic SANblade 2200, QLA2200F-CK	279821	Same Day	$1,059.52	$13,773.76

Click ⊖ to remove an item from your cart. Sub-Total $23,172.47

Update Continue to Checkout

QuickCart: ⊕ Enter a CDW part number to quickly add it to your cart.

Shipping Calc: ⊕ Enter a postal code to quickly estimate shipping cost.

< Continue Shopping

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 425 882 8080
Fax 425 936 7329
http://www.microsoft.com/

Microsoft

September 6, 2002

NEC Corporation
Keiichi Yamada
1-10 Nisshin-cho, Fuchu-shi
Tokyo, 1838501

Yamada-san:

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
N/A	**SQL Server 2000 Enterprise Edition 64-bit** *Per processor licensing* *Discount Schedule: Open Program Level C* *Unit Price reflects a 17% discount from the retail unit price of $19,999.*	$16,541	32	$529,312
C11-00821	**Windows 2000 Server 32-bit** *Server license only - No CALs* *Discount Schedule: Open Program - No Level* *Unit Price reflects a 8% discount from the retail unit price of $799.*	$738	32	$23,616
048-00317	**Visual C++ Professional 6.0 Win32** *No discounts applied*	$549	1	$549
PRO-PRORS-16U-01	**Database Server Support Package** *1 Year Term*	$1,950	3	$5,850

Some products may not be currently orderable but will be available through Microsoft's normal distribution channels by December 31, 2002.

This quote is valid for the next 90 days.

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

Reference ID: PCkeya0206095978
Please include this Reference ID in any correspondence regarding this price quote.