NEC

TPC Benchmark™ C
Full Disclosure Report

NEC Express5800/140Rc-4 (4 SMP)

Using Microsoft® Windows® Server 2003, Enterprice Server
and
Microsoft® SQL Server™ 2000, Enterprise Edition

First Edition
Submitted for Review
April 9, 2003

NEC, the Sponsor of this benchmark test, believes 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 does not warrant or represent that a user can or will achieve similar performance expressed in transactions per minute (tpmC) or normalized price/performance ($/tpmC). No warranty of system performance or price/performance is expressed or implied in this report.

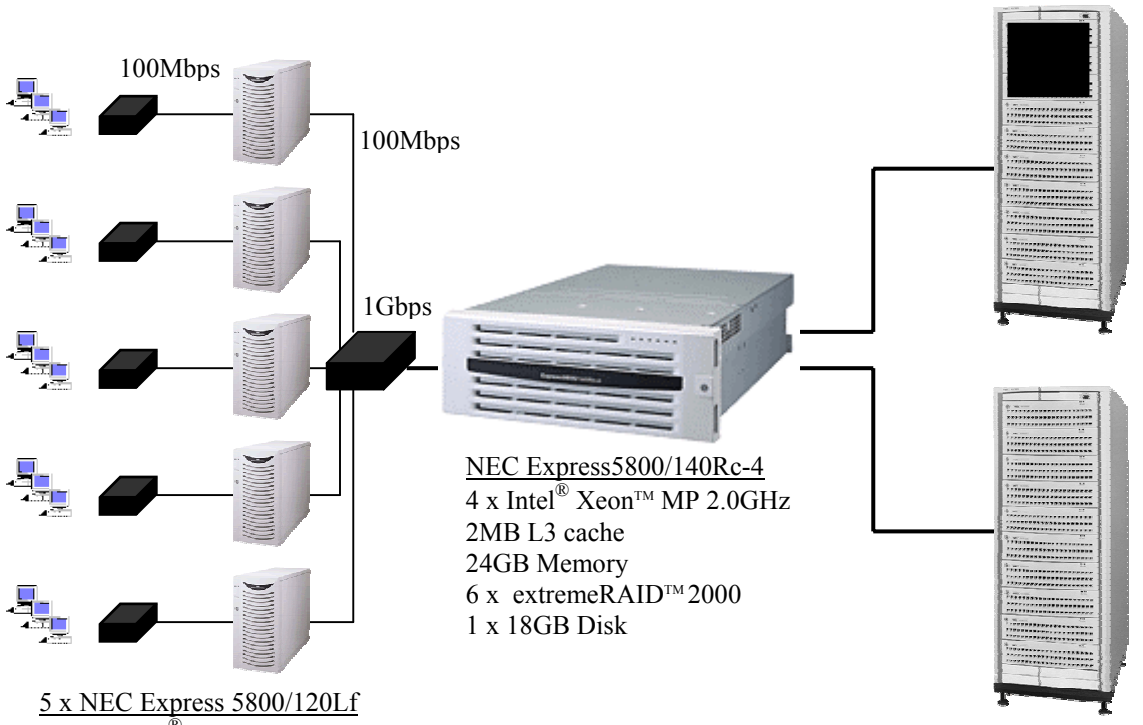
Printed in USA, 2003

NEC Express5800/140Rc-4
C/S with Express5800/120Lf

TPC-C Rev. 5.1
Reported Date
April 9, 2003

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
$347,076	70,653.01 tpmC	$4.92 per tpmC	April 30, 2003

Processors	Database Manager	Operating System	Other Software	Number of Users
4 Intel® Xeon™ MP 2.0GHz for Server 5 x 2 Intel® Pentium® III 1.26GHz for Client	Microsoft® SQL Server™ 2000 Enterprise Edition	Microsoft® Windows® Server 2003, Enterprise Server	Windows® 2000 Server Microsoft® Visual C++ Microsoft® COM+	57,000



NEC Express5800/140Rc-4
4 x Intel® Xeon™ MP 2.0GHz
2MB L3 cache
24GB Memory
6 x extremeRAID™2000
1 x 18GB Disk

5 x NEC Express 5800/120Lf
2 x Pentium® III 1.26GHz 512KB L2
1GB Memory
1 x 18GB disk

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

System Component	Server		Each Client	
Processors **Cache**	4	Intel® Xeon™ MP 2.0GHz 2MB L3 Cache	2	Intel® Pentium®III 1.26GHz 512KB L2 Cache
Memory		2 GB x 12		512MB x 2
Disk Controllers	6 1	Mylex® eXtremeRAID™ 2000 On-board SCSI	1	On-board SCSI
Disk Drives	1 198	18GB 18GB	1	18GB
Total Storage		3582GB		18GB
Others	1 1	CD-ROM Drive On-board 1Gbps Ether	1 2 1	CD-ROM Drive On-board Ether controller 100Mbps Ether NIC

NEC

NEC Express5800/140Rc-4
C/S with Express5800/120Lf

TPC-C REV 5.1

Report Date:
April 9, 2003

Description	Part Number	Third Party Brand	Pricing	Unit Price	Qty	Extended Price	3-yr Mnt. Price
Server Hardware							
Express5800/140Rc-4 system							
Base system with 1 x Xeon MP 2.0GHz/2MB	850168003	NEC	1	13,999	1	13,999	0
Xeon MP 2.0GHz/2MB BTO Option	062-02289-000	NEC	1	6,999	3	20,997	0
8GB (4 x 2GB DDR200 DIMM) memory,	062-02310-000	NEC	1	15,999	3	47,997	0
18GB 10K rpm HDD,	062-02011-000	NEC	1	329	1	329	0
On-board Gbit Ether LAN	Included	NEC	1	0	1	0	0
CD-ROM, On-board LAN, KB/MS	Included	NEC	1	0	1	0	0
20/40GB SCSI DDS-4 DAT Internal Drive	ADT-4010-IN-00	NEC	1	949	1	949	0
Upgrade to 3-year / 4-hour response / 7 days-24hrs	EN-0000-1095-7244	NEC	1	1,799	1	0	1,799
NEC AccuSync50 (15" monitor)	AS50M-BK	NEC	3	128	1	128	0
					Subtotal	84,399	1,799
Disk Subsystem							
Extreme RAID2000 4channel controller (+2 spares)	E2000-4-32NB	Mylex	3	1,419	8	11,355	0
3U Disk Expansion Unit ST1430(+2 spares)	NDE-1430-00-00	NEC	1	2,299	19	43,681	0
18GB 15k rpm HDD(+10% spares)	062-02150-000	NEC	1	459	218	100,062	0
42U Rackframe	050-01790-000	NEC	1	1,799	2	3,598	0
APC Smart UPS 3000RM3U	050-01800-000	NEC	1	1,599	2	3,198	768
					Subtotal	161,894	768
Server Software							
SQL Server2000 Ent. Edition,Unlimited Client License	810-00846	Microsoft	2	16,541	4	66,164	5,850
Windows Server 2003, Enterprise Server	P72-00264	Microsoft	2	2,399	1	2,399	0
					Subtotal	68,563	5,850
Client Hardware							
NEC Express5800/120Lf							
Base System with 1 x Pentium III 1.26GHz/512KB	850151004	NEC	1	2,799	5	13,995	0
1 x Pentium III 1.26GHz/512KB BTO Option	062-02006-000	NEC	1	699	5	3,495	0
2 x 256MB memory,	062-02008-000	NEC	1	439	10	4,390	0
1 x 18GB 10K rpm HDD,	062-02011-000	NEC	1	329	5	1,645	0
CD-ROM, 2 x On-board LAN, KB/MS	Included	NEC	1	0	5	0	0
Intel PRO/100 S Server Adapter	PILA8470C3	intel	3	69	2	137	0
Intel PRO/100 S Server Adapter, 5-pack	PILA8470C3PAK5	intel	3	286	1	286	0
Upgrade to 3-year / 4-hour response / 7 days-24hrs	DE-0000-1095-7244	NEC	1	1,599	1	0	1,599
Fast Ether Cable 25' RJ45-RJ45 (+10% spares)	C5E-114GY-25FB	AESP	3	11	18	195	0
NEC AccuSync50 (15" monitor)	AS50M-BK	NEC	3	128	5	640	0
					Subtotal	24,783	1,599
Client Software							
Windows 2000 Server	C11-00821	Microsoft	2	738	5	3,690	0
Visual C++ Standard	254-00170	Microsoft	2	109	1	109	0
					Subtotal	3,799	0
User Connectivity							
Allied Telesyn 6-prt Gigabit Switch (+2spare)	AT-9006T	Allied Telesyn	3	2,249	3	6,747	0
					Subtotal	6,747	0
					TOTAL	350,185	10,016
NEC Pricing						258,335	4,166
Large volume purchase with cash in advance Discount on NEC hardware (5%)						12,917	208
					TOTAL	337,268	9,807

All Microsoft maintenance is covered by the maintenance costs of Microsoft SQL Server
Pricing: 1-NEC 2-Microsoft 3-CDW

3-Yr. Cost of Ownership: **$347,076**
tpmC Rating: **70653.01**

$ / tpmC: 4.92

Audited by Francois Raab, InfoSizing, Inc

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 70,653.01 tpmC

Response Times(in seconds)	Average	Maximum	90%
New-Order	0.59	7.59	0.99
Payment	0.51	7.91	0.91
Delivery(interactive portion)	0.10	0.13	0.11
Stock-Level	1.23	7.28	1.79
Order-status	0.55	6.86	0.95
Delivery(deferred portion)	0.18	1.36	0.25
Menu	0.10	1.20	0.11

Response time delay added for emulated components 0.1

Transaction Mix , in percent of total transaction

New-Order	44.88%
Payment	43.08%
Delivery	4.01%
Stock-Level	4.02%
Order-Status	4.00%

Keying/Think Times (in seconds)	Average		Min		Max	
New-Order	18.02	12.07	18.00	0.00	18.06	120.71
Payment	3.02	12.08	3.00	0.00	3.06	120.71
Order-Status	2.02	5.07	2.00	0.00	2.05	50.71
Delivery	2.02	5.05	2.00	0.00	2.06	50.71
Stock-Level	2.02	10.06	2.00	0.00	2.06	100.70

Test Duration

Ramp-up time	60 minutes
Measurement interval	120 minutes
Number of checkpoints	4
Checkpoint interval	30 minutes
Number of transactions (all types) completed in measurement interval	19,563,346

Abstract

This report documents the compliance of NEC Corporation's TPC Benchmark™ C tests on the NEC Express5800/140Rc-4 client/server system with version 5.1 of the TPC Benchmark C Standard Specification. 5 Clients (NEC Express5800/120Lf) were used as the front-end clients.

The operating system and the DBMS used on the server were Microsoft Windows Server 2003, Enterprise Server and Microsoft® SQL Server™ 2000, Enterprise Edition. The operating system on the clients was Microsoft® Windows® 2000 Server SP2. Those clients ran Microsoft® 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 (three year capital cost per measured tpmC) are reported.

System	SW	Total System Cost	TpmC	$ per tpmC	Availability Date
NEC Express5800 /140Rc-4	Microsoft Windows® Server 2003 Enterprise Server Microsoft SQL Server™ 2000, Enterprise Edition	$347,076	70653.01	$4.92	April 30, 2003

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 5.1.

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,*
- *longest 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 Express5800/140Rc-4. Price quotations contained in Appendix E correspond to the NEC Express5800/140Rc-4 server.

Parameters and Options

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

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

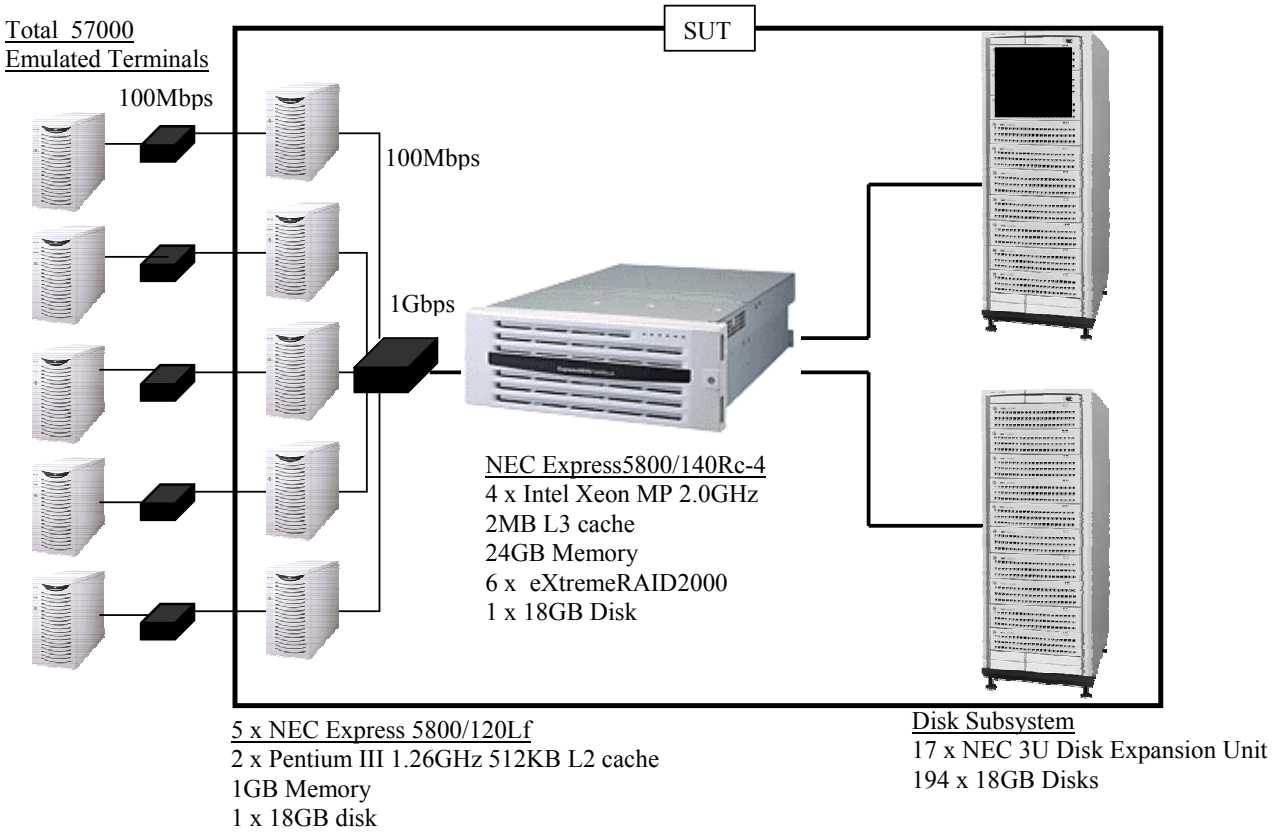
- *Number and type of processors*
- *Size of allocated memory, and any specific mapping/partitioning of memory unique to the test.*
- *Number and type of disk units (and controllers, if applicable).*
- *Number of channels or bus connections to disk units, including their protocol type.*
- *Number of 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.

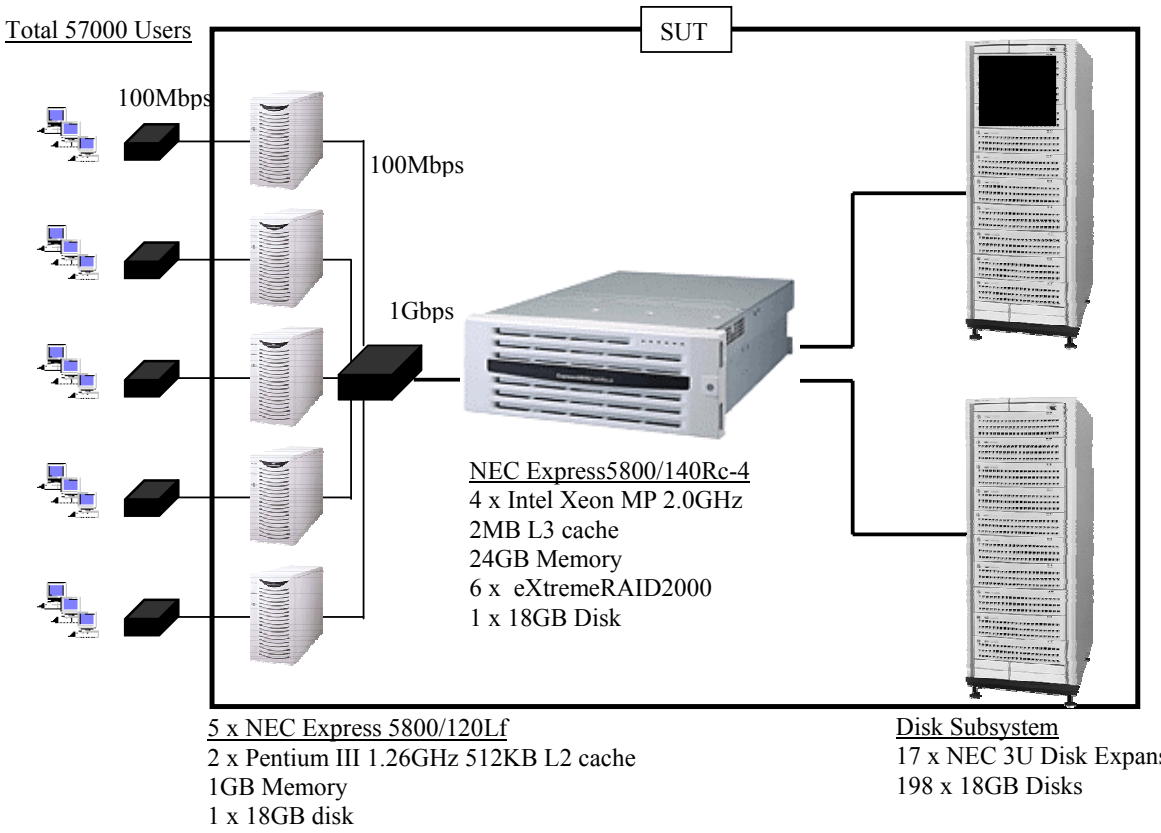
Figure 1.1 Express5800/140Rc-4, Measured Configuration Diagram



Priced System Configuration

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

Figure1.2: Express5800/140Rc-4, 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 internally by the Microsoft® BenchCraft RTE program which was already audited independently.

Terminal Input/Output Screen Layout

The actual layouts 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 Clause 8.1.3.5 through 8.1.3.11

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	**85.03%**
	Remote warehouse payments	**14.97%**
	Accessed by last name	**59.97%**
Order Status	Accessed by last name	**60.08%**
Delivery	Skipped deliveries	**0**
Transaction Mix	New Order	**44.88%**
	Payment	**43.08%**
	Delivery	**4.01%**
	Stock Level	**4.02%**
	Order Status	**4.00%**

Queuing Mechanism

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

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

The source code is listed in Appendix A.

Clause 3 : Transaction and System Properties Related Items

Transaction System Properties (ACID)

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

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

Atomicity Tests

The system under test must guarantee that 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 transaction for a 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 a 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 the 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 30 minutes under 28,500 users (2,850 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 transactions and ensure database consistency after recovery from any one of the failures listed in Clause 3.5.3.

- *Permanent irrecoverable failure of any single durable medium during the Measurement Interval containing TPC-C database tables or recovery log data.*
- *Instantaneous interruption (system or subsystem crash/system hang) in processing which causes all or part of the processing of atomic transactions to halt..*

- *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 5,700 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. 57,000 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 shut down.
8. The system was powered up. SQL Server™ 2000 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 570 Warehouse database. The standard driving mechanism was used to generate the transaction load of 5,700 users for the test. To demonstrate recovery from a permanent failure of durable media containing TPC-C tables, the following steps were performed.

1. A 570 Warehouse database was built having similar characteristics to the large database.
2. The database was backed up using SQL Server™ 2000 backup facilities.
3. A sum of D_NEXT_O_ID was taken.
4. 5,700 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™ 2000 error. Shut down SQL Server™ 2000.
6. SQL Server™ 2000 was restarted and a dump of the transaction log was taken.
7. The 570 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.

1.

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 6,000 warehouses.

Table 2 Number of Rows for Server

Table	Cardinality as benchmarked
Warehouse	6,000
District	60,000
Customer	180,000,000
History	180,000,000
Orders	180,000,000
New Order	54,000,000
Order Line	1,799,998,798
Stock	600,000,000
Item	100,000
Deleted Warehouse Rows	300

300 warehouses were deleted before the measurement. 5,700 warehouses and their associated tables were accessed during the measurement.

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 the 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

DAC#	Configuration	Phisicaldisk Capacity (GB)	Partition1	Partition2	Partition3
Partitions for DB Data			misc fg (raw)	cs fg (raw)	For backup file (NTFS)
0	36 spindles RAID0	614.52	F: (72.01GB)	M: (120.01GB)	S: (422.51GB)
1	36 spindles RAID0	614.52	G: (72.01GB)	N: (120.01GB)	T: (422.51GB)
2	36 spindles RAID0	614.52	H: (72.01GB)	O: (120.01GB)	U: (422.51GB)
3	36 spindles RAID0	614.52	I: (72.01GB)	P: (120.01GB)	V: (422.51GB)
4	36 spindles RAID0	614.52	J: (72.01GB)	Q: (120.01GB)	W: (422.51GB)
Partitions for DB Log			DB Log (raw)	Workspace (NTFS)	
5	Span 7 RAID1 pairs (2 X 7 spindles)	119.49	E: (100GB)	L: (19.49GB)	
Partitions for OS (single SCSI disk)			OS (NTFS)		
		17.08	C: (17.08GB)		

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™ 2000, a relational database, was used in this benchmark. SQL Server™ 2000 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 space used 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 148.68 GB of logspace (i.e 297.36 GB of mirrored transaction log volume) to be available to sustain 8 hours. Total space of priced disks for the transaction log volume was 307.26 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

70,653.01 tpmC

Response Times

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

Table 5 : Response Times (in seconds)

Type	Average	Maximum	90th %
New-Order	0.59	7.59	0.99
Payment	0.51	7.91	0.91
Interactive Delivery	0.10	0.13	0.11
Stock Level	1.23	7.28	1.79
Order Status	0.55	6.86	0.95
Deferred Delivery	0.18	1.36	0.25
Menu	0.10	1.20	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	Average	Minimum	Maximum
New-Order	18.02	18.00	18.06
Payment	3.02	3.00	3.06
Interactive Delivery	2.02	2.00	2.05
Stock Level	2.02	2.00	2.06
Order Status	2.02	2.00	2.06

Table 7 : Think Times

Type	Average	Minimum	Maximum
New-Order	12.07	0.00	120.71
Payment	12.08	0.00	120.71
Interactive Delivery	5.07	0.00	50.71
Stock Level	5.05	0.00	50.71
Order Status	10.06	0.00	100.70

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

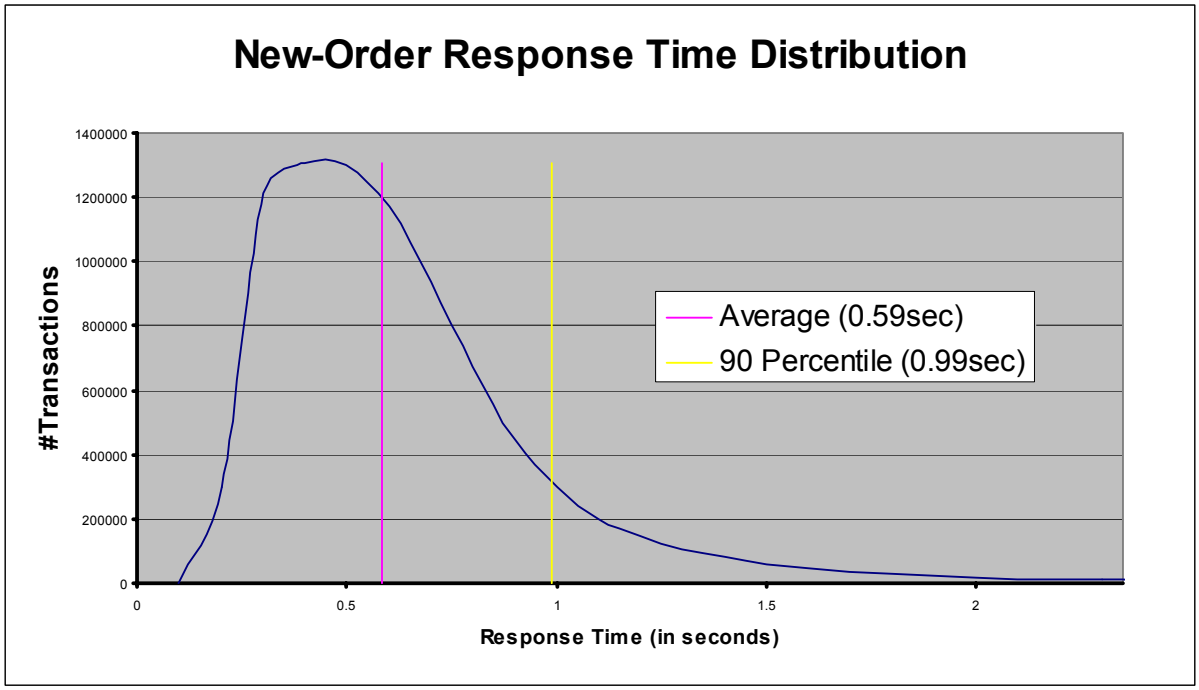


Figure 2.2 : Payment Response Time Distribution

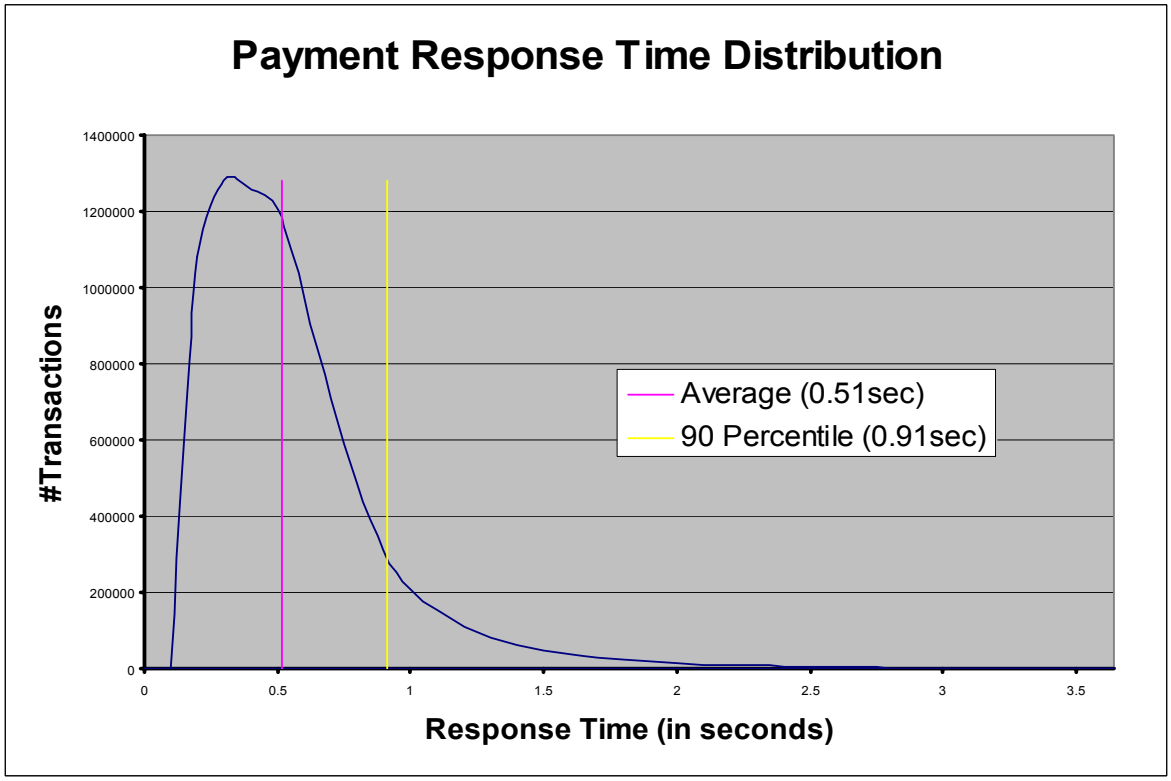


Figure 2.3 : Order-Status Response Time Distribution

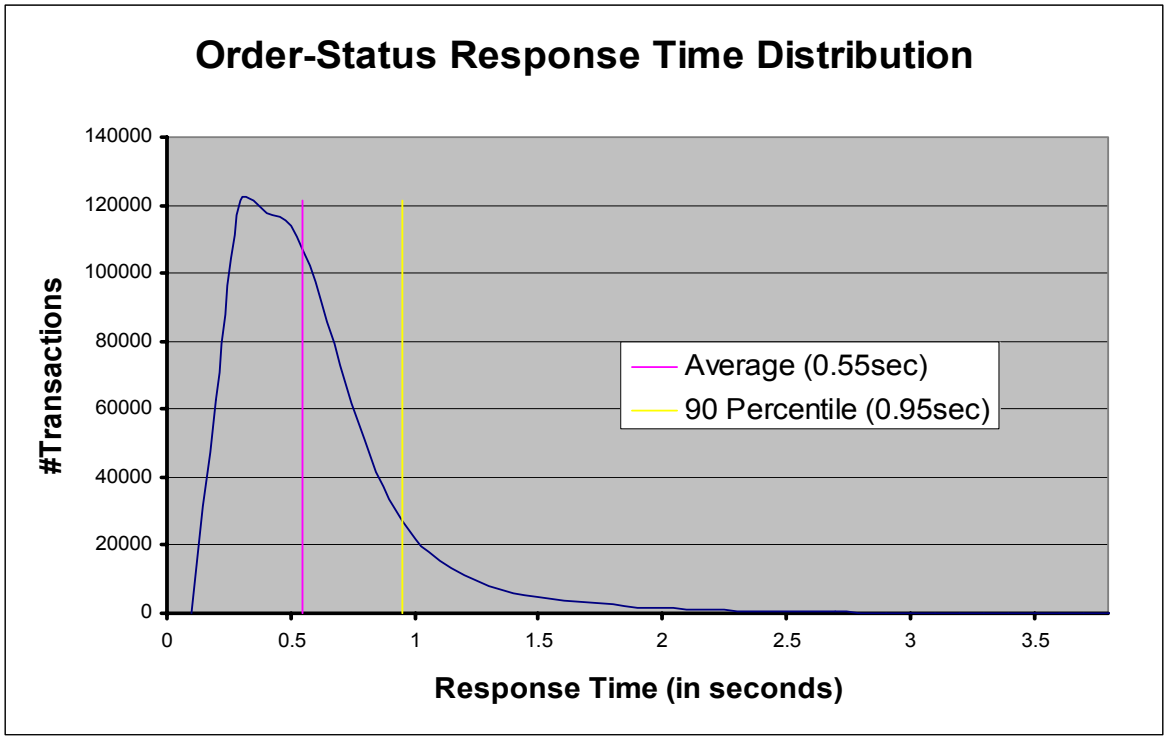


Figure 2.4 : Delivery Response Time Distribution

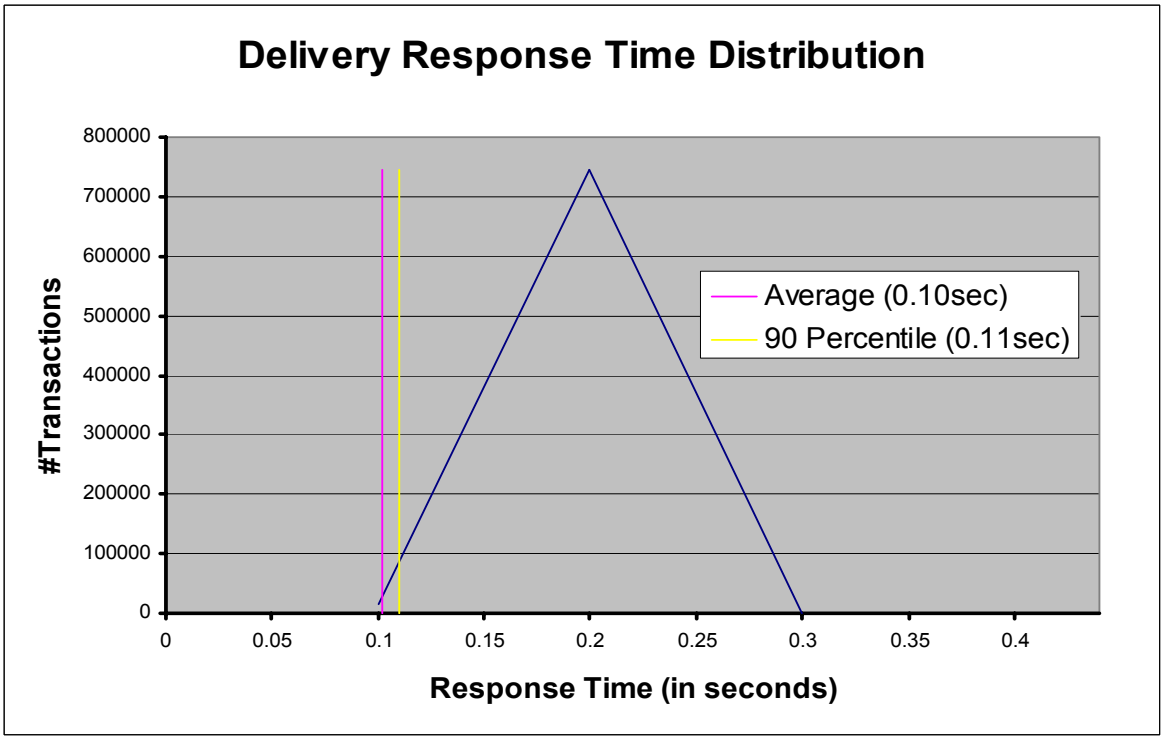
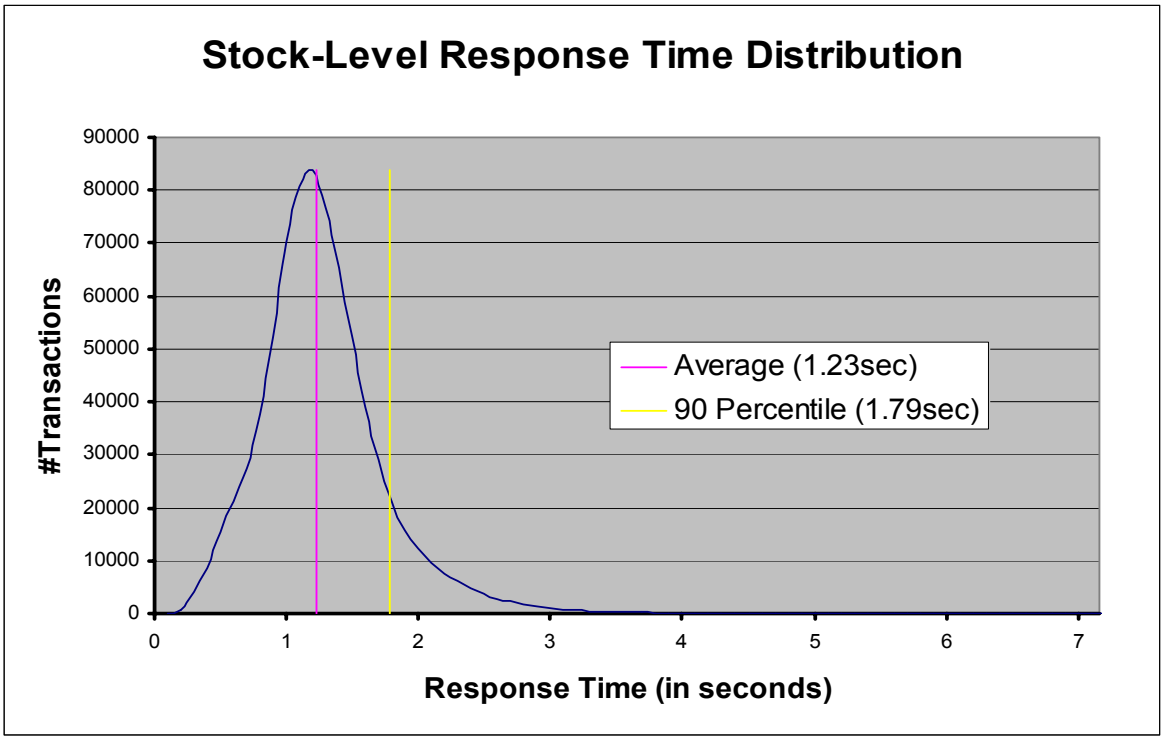


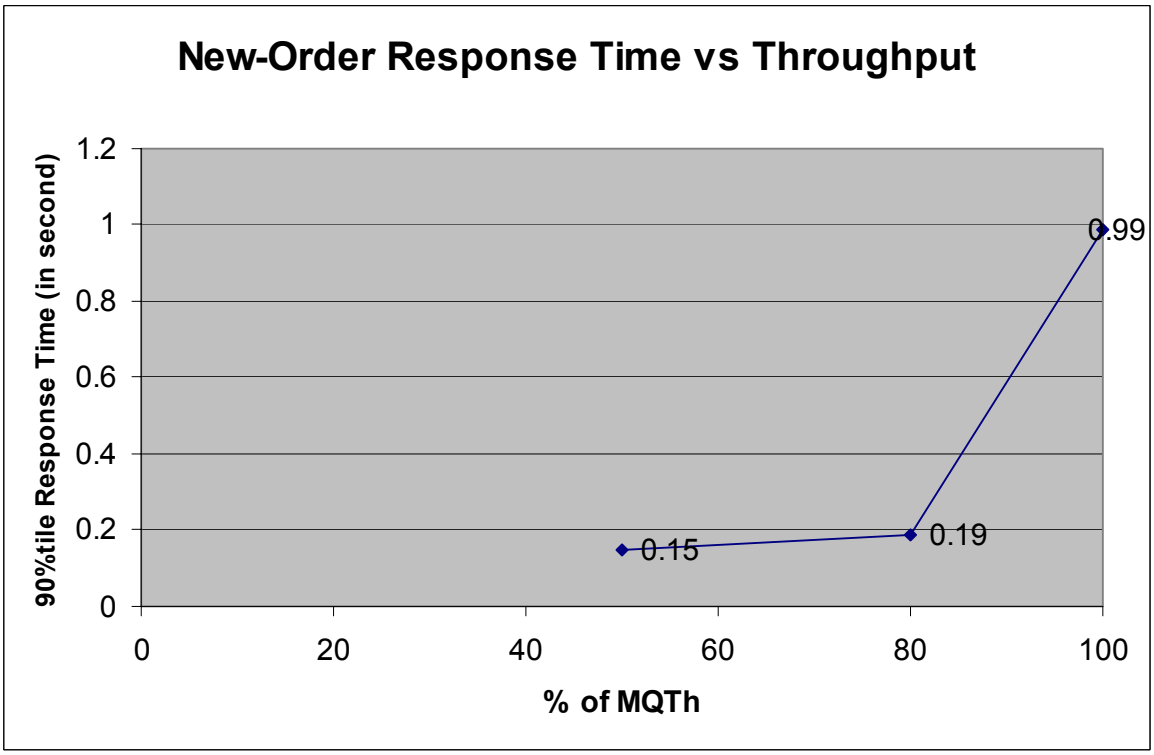
Figure 2.5 : Stock-Level Response Time Distribution



Response time versus Throughput Curve

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

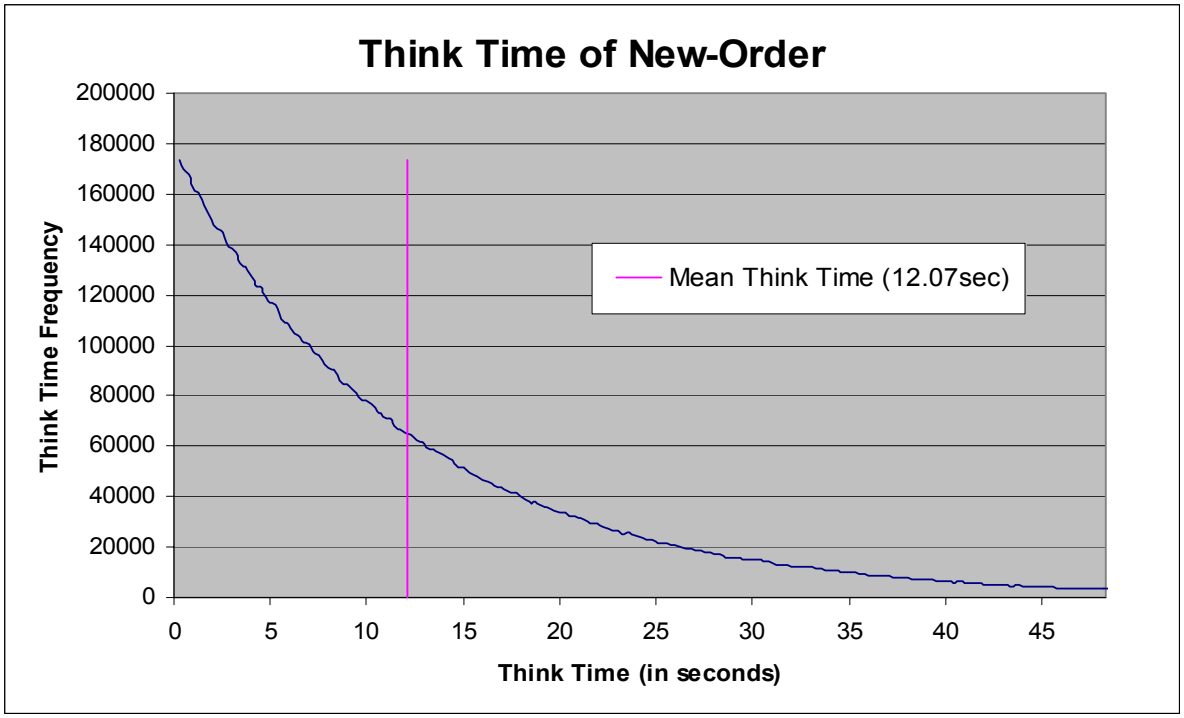
Figure 2.6 Response Time vs. Throughput Curve



New-Order Think Time Frequency Distribution

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

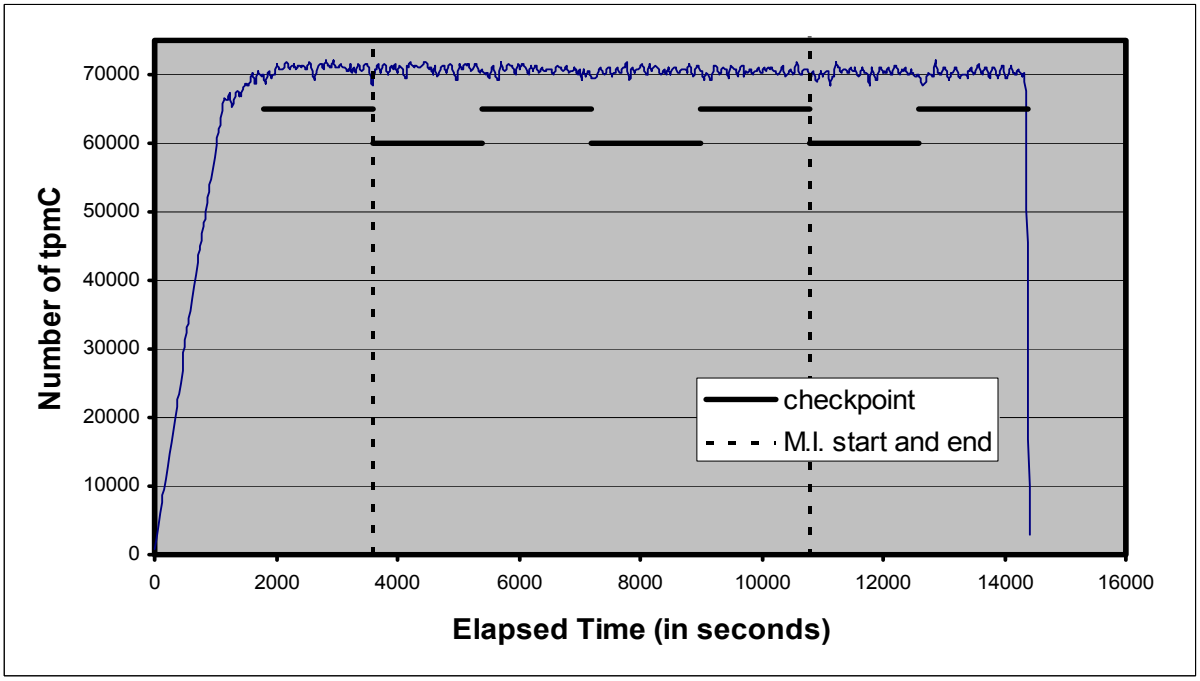
Figure 2.7 New-Order Think Time



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™ 2000 writes to disk all updated memory pages that have not been yet actually written to disk. SQL Server™ 2000 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.	10:20:00	12:20:00	7200
1st Checkpoint	10:20:06	10:49:51	1785
2nd Checkpoint	10:50:05	11:19:50	1785
3rd Checkpoint	11:20:04	11:49:49	1785
4th Checkpoint	11:50:03	12:19:48	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 two checkpoints before measurement and four checkpoints during measurement.
The time of the first checkpoint during the measurement interval is 6.51 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. 5 front-end clients were connected 1000/100/10 LAN switch with 100Mbps bandwidth. Each front-end clients has two 100Mbps adapter, one for connecting to a back-end database server and another one for connecting to RTE system. The network bandwidth between RTE system and the front-end clients is 100Mbps.

Operator Intervention

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

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

Clause 7 : Pricing Related Items

Hardware and Software Components

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

The total system as priced will be available April 30, 2003.

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 : 70,653.01 tpmC
- Price per tpmC : $4.92 per tpmC
- Total 3-year cost of ownership : $347,076

Country Specific Pricing

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

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

Usage Pricing

For any usage pricing, the sponsor must disclose:

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

None

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 charges for similar documents by that 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
Presidio of San Francisco
Building 572B (surface)
P.O. Box 29920 (mail) San Francisco, CA 94129-0920
Voice: 415-561-6272
Fax: 415-561-6120
Email: info@tpc.org

Auditor's letter

INFO SIZING

TPC TRANSACTION PROCESSING PERFORMANCE COUNCIL
CERTIFIED AUDITOR

Sponsor: Kibo Iijima
NEC Corporation
1-10 Nisshincho
Fuchu City, Tokyo 183-8501

April 2, 2003

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

Platform: NEC Express5800/140Rc-4 c/s
Operating system: Microsoft Windows Server 2003 Enterprise Server
Database Manager: Microsoft SQL Server 2000 Enterprise Edition
Transaction Manager: Microsoft COM +

The results were:

CPU's Speed	Memory	Disks	NewOrder 90% Response Time	tpmC
Server: NEC Express5800/140Rc-4				
4 x Xeon MP (2.0 GHz)	24 GB (2 MB cache/cpu)	1 x 18 GB int. 198 x 18 GB ext.	0.99 Seconds	70,653.01
Five Clients: NEC Express 5800/120Lf (Specification for each)				
2 x Pentium III (1.26 GHz)	1 GB (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 5.1 of the benchmark.

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

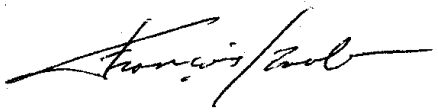
The following verification items were given special attention:

- 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
             // offset in log file where log records start
             #define                  TXN_LOG_EYE_CATCHER       "BC"      // signature
bytes at the start of log file


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

                                      // 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
 *              msgno                                   DBINT
                                                        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

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

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

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "db_odbc_"
# PROP BASE Intermediate_Dir "db_odbc_"
# PROP BASE Ignore_Export_Lib 0
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ".\bin"
# PROP Intermediate_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 ..\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
 *           *pValue                                 char
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_IID_KEY,
                ERR_NEWORDER_MISSING_QTY_KEY,
                ERR_NEWORDER_MISSING_SUPPW_KEY,
                ERR_NEWORDER_NOITEMS_ENTERED,
                ERR_NEWORDER_QTY_INVALID,
                ERR_NEWORDER_QTY_RANGE,
                ERR_NEWORDER_QTY_WITHOUT_SUPPW,
                ERR_NEWORDER_SUPPW_INVALID,
                ERR_NO_SERVER_SPECIFIED,
                ERR_ORDERSTATUS_CID_AND_CLT,
                ERR_ORDERSTATUS_CID_INVALID,
                ERR_ORDERSTATUS_CLT_RANGE,
                ERR_ORDERSTATUS_DID_INVALID,
                ERR_ORDERSTATUS_MISSING_CID_CLT,
                ERR_ORDERSTATUS_MISSING_CID_KEY,
                ERR_ORDERSTATUS_MISSING_CLT_KEY,
                ERR_ORDERSTATUS_MISSING_DID_KEY,
                ERR_PAYMENT_CDI_INVALID,
                ERR_PAYMENT_CID_AND_CLT,
                ERR_PAYMENT_CUSTOMER_INVALID,
                ERR_PAYMENT_CWI_INVALID,
                ERR_PAYMENT_DISTRICT_INVALID,
                ERR_PAYMENT_HAM_INVALID,
                ERR_PAYMENT_HAM_RANGE,
                ERR_PAYMENT_LAST_NAME_TO_LONG,
                ERR_PAYMENT_MISSING_CDI_KEY,
                ERR_PAYMENT_MISSING_CID_CLT,
                ERR_PAYMENT_MISSING_CID_KEY,
                ERR_PAYMENT_MISSING_CLT,
                ERR_PAYMENT_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();
};

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("122A3128-252O-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("CDO2F7EF-A4FA-11D2-BA4E-00C04FBFE08B")
Payment;
#endif

EXTERN_C const CLSID CLSID_StockLevel;

#ifdef __cplusplus

class DECLSPEC_UUID("2668369E-A5OD-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(122A3117-252O-11D3-BA71-00C04FBFE08B),
            version(1.0),
            helpstring("TPC-C 1.0 Type Library")
]
library TPCCLib
{
            importlib("stdole32.tlb");
            importlib("stdole2.tlb");

            [
                        uuid(122A3128-252O-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(CDO2F7EF-A4FA-11D2-BA4E-00C04FBFE08B),
                        helpstring("Payment Class")
            ]
            coclass Payment
            {
                        [default] interface ITPCC;
            };


            [
                        uuid(2668369E-A5OD-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( 0xffffffdf ),  /* 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 */
```

```
/* 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( 0xfffffffe0 ),     /* Offset= -32 (594) */
/* 628 */
                                            0x21,                   /*
FC_BOGUS_ARRAY */
                                            0x3,                    /* 3 */
/* 630 */    NdrFcShort( 0x0 ),             /* 0 */
/* 632 */    0x19,                          /* Corr desc:  field pointer, FC_ULONG
*/
                                            0x0,                    /*  */
/* 634 */    NdrFcShort( 0x0 ),             /* 0 */
/* 636 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 638 */    NdrFcLong( 0xffffffff ),       /* -1 */
/* 642 */    NdrFcShort( 0x0 ),             /* Corr flags:  */
/* 644 */
                                            0x12, 0x0,   /* FC_UP */
/* 646 */    NdrFcShort( 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) */
/* 684 */
                                            0x5b,                   /* FC_END */
                                            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) */
/* 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( 0xfffffffe6 ),     /* 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( 0xfffffffe6 ),     /* 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( 0xfffffffe6 ),     /* Offset= -26 (760) */
/* 788 */
                                            0x1b,                   /* FC_CARRAY
*/
                                            0x7,                    /* 7 */
/* 790 */    NdrFcShort( 0x8 ),             /* 8 */
/* 792 */    0x19,                          /* Corr desc:  field pointer, FC_ULONG
*/
                                            0x0,                    /*  */
/* 794 */    NdrFcShort( 0x0 ),             /* 0 */
/* 796 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 798 */    0xb,                           /* FC_HYPER */
                                            0x5b,                   /* FC_END */
/* 800 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 802 */    NdrFcShort( 0x10 ),            /* 16 */
/* 804 */    NdrFcShort( 0x0 ),             /* 0 */
/* 806 */    NdrFcShort( 0x6 ),             /* Offset= 6 (812) */
/* 808 */    0x8,                           /* FC_LONG */
                                            0x39,                   /* FC_ALIGNM8
*/
/* 810 */    0x36,                          /* FC_POINTER */
                                            0x5b,                   /* FC_END */
/* 812 */
                                            0x12, 0x0,   /* FC_UP */
/* 814 */    NdrFcShort( 0xfffffffe6 ),     /* Offset= -26 (788) */
/* 816 */
                                            0x15,                   /* FC_STRUCT
*/
                                            0x3,                    /* 3 */
/* 818 */    NdrFcShort( 0x8 ),             /* 8 */
/* 820 */    0x8,                           /* FC_LONG */
                                            0x8,                    /* FC_LONG */
/* 822 */    0x5c,                          /* FC_PAD */
                                            0x5b,                   /* FC_END */
/* 824 */
                                            0x1b,                   /* FC_CARRAY
*/
                                            0x3,                    /* 3 */
/* 826 */    NdrFcShort( 0x8 ),             /* 8 */
/* 828 */    0x7,                           /* Corr desc: FC_USHORT */
                                            0x0,                    /*  */
/* 830 */    NdrFcShort( 0xffc8 ),          /* -56 */
/* 832 */    NdrFcShort( 0x1 ),             /* Corr flags:  early, */
/* 834 */    0x4c,                          /* FC_EMBEDDED_COMPLEX */
                                            0x0,                    /* 0 */
/* 836 */    NdrFcShort( 0xffffffec ),      /* Offset= -20 (816) */
/* 838 */    0x5c,                          /* FC_PAD */
                                            0x5b,                   /* FC_END */
/* 840 */
                                            0x1a,                   /*
FC_BOGUS_STRUCT */
                                            0x3,                    /* 3 */
/* 842 */    NdrFcShort( 0x38 ),            /* 56 */
/* 844 */    NdrFcShort( 0xffffffec ),      /* Offset= -20 (824) */
/* 846 */    NdrFcShort( 0x0 ),             /* Offset= 0 (846) */
/* 848 */    0x6,                           /* FC_SHORT */
                                            0x6,                    /* FC_SHORT
*/
/* 850 */    0x38,                          /* FC_ALIGNM4 */
                                            0x8,                    /* FC_LONG */
/* 852 */    0x8,                           /* FC_LONG */
                                            0x4c,                   /*
FC_EMBEDDED_COMPLEX */
/* 854 */    0x4,                           /* 4 */
                                            NdrFcShort( 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

```
::-------------------------------------------------------------------------------
-----------
::---  FILE:       RUNSQLCFG.CMD
::---              Microsoft TPC-C Kit Ver. 4.41
::---              Copyright Microsoft, 2001
::---              All Rights Reserved
::----
::---  PURPOSE:    Calls RunSQLCfg.sql to configure SQL Server
::----
::---  ARGUMENTS:  Optionally, the user can pass the following positional
arguments:
::----                 Server Name
::----                 sa SQL Server account password
::----                 Number of Warehouses
::----                 Build Option
::----
{full,builddb,objects,objectsfull,bulkload,bulkloadfull,backup}
::----                 Database Type
::----                    {normal or scale_down}
::----
::----              If they are not passed, then the user will be prompted by the
VBS file.
::----
::-------------------------------------------------------------------------------
-----------
@cscript SetupScripts\setup.vbs //H:CScript //I %1 %2 %3 %4 %5
```

backup.sql

```
--  File:     BACKUP.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates backup of tpcc database


declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

dump database tpcc to tpccback1, tpccback2, tpccback3, tpccback4, tpccback5 with
init, stats = 1

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

go
```

backupdev.sql

```
--  File:     BACKUPDEVB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates tpcc database Backup Devices


use master
go

--  create backup devices

exec sp_addumpdevice 'disk','tpccback1','S:\tpccback1x5hbaL10OgTzPcf3850w2.dmp'
go
exec sp_addumpdevice 'disk','tpccback2','T:\tpccback2x5hbaL10OgTzPcf3850w2.dmp'
go
exec sp_addumpdevice 'disk','tpccback3','U:\tpccback3x5hbaL10OgTzPcf3850w2.dmp'
go
exec sp_addumpdevice 'disk','tpccback4','V:\tpccback4x5hbaL10OgTzPcf3850w2.dmp'
go
exec sp_addumpdevice 'disk','tpccback5','W:\tpccback5x5hbaL10OgTzPcf3850w2.dmp'
go
```

createdb.sql

```
--  File:     CREATEDB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates tpcc database and backup files


use master
go

--            Create temporary table for timing

if exists ( select name from sysobjects where name = 'tpcc_timer' )
              drop table tpcc_timer
go

create table tpcc_timer
(
              start_date                                          char(30),
              end_date                                            char(30)
)

insert        into tpcc_timer values (0,0)
go

--            Store starting time

update        tpcc_timer
set           start_date    = (select convert(char(30), getdate(),9))
go

--  create main database files

CREATE DATABASE tpcc
ON PRIMARY
(             NAME                        = MSSQL_tpcc_root,
              FILENAME      = "c:\MSSQL_tpcc_root.mdf",
              SIZE                        = 8MB,
              FILEGROWTH    = 0),
FILEGROUP     MSSQL_misc_fg
(             NAME                        = MSSQL_misc1,
              FILENAME      = "F:",
              SIZE                        = 36900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_misc2,
              FILENAME      = "G:",
              SIZE                        = 36900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_misc3,
              FILENAME      = "H:",
              SIZE                        = 36900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_misc4,
              FILENAME      = "I:",
              SIZE                        = 36900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_misc5,
              FILENAME      = "J:",
              SIZE                        = 36900MB,
              FILEGROWTH    = 0),
FILEGROUP     MSSQL_cs_fg
(             NAME                        = MSSQL_cs1,
              FILENAME      = "M:",
              SIZE                        = 59900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_cs2,
              FILENAME      = "N:",
              SIZE                        = 59900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_cs3,
              FILENAME      = "O:",
              SIZE                        = 59900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_cs4,
              FILENAME      = "P:",
              SIZE                        = 59900MB,
              FILEGROWTH    = 0),
(             NAME                        = MSSQL_cs5,
              FILENAME      = "Q:",
              SIZE                        = 59900MB,
              FILEGROWTH    = 0)
LOG ON
(             NAME                        = MSSQL_tpcc_log1,
              FILENAME      = "E:",
              SIZE                        = 100000MB,
              FILEGROWTH    = 0)
COLLATE Latin1_General_BIN
go

-- Store ending time
update        tpcc_timer
set           end_date      = (select convert(char(30), getdate(),9))
go

select "Elapsed time (in seconds): ", datediff(second,(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
```

removedb.sql

```
--  File:     REMOVEDB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Removes tpcc database and backup files


use master
go

--  remove any existing database and backup files

exec sp_dbremove tpcc, dropdev
go

exec sp_dropdevice 'tpccback1'
exec sp_dropdevice 'tpccback2'
exec sp_dropdevice 'tpccback3'
exec sp_dropdevice 'tpccback4'
exec sp_dropdevice 'tpccback5'
go
```

restore.sql

```
--  File:     RESTORE.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Loads database backup from backup files


declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

load database tpcc from tpccback1, tpccback2, tpccback3, tpccback4, tpccback5
with stats = 1, replace

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

go
```

idxcuscl.sql

```
--  File:     IDXCUSCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates clustered index on customer table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where name = 'customer_c1' )
            drop index customer.customer_c1

create unique clustered index customer_c1 on customer(c_w_id, c_d_id, c_id)
            on MSSQL_cs_fg

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

go
```

idxcusnc.sql

```
--  File:     IDXCUSNC.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates non-clustered index on customer table


use tpcc
go

declare @startdate datetime
declare @enddate datetime
select @startdate = getdate()
select "Start date:", convert(varchar(30),@startdate,9)

if exists ( select name from sysindexes where  name = 'customer_nc1' )
            drop index customer.customer_nc1

create unique nonclustered index customer_nc1 on customer(c_w_id, c_d_id, c_last,
c_first, c_id)
            on MSSQL_cs_fg

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

go
```

idxdiscl.sql

```
--  File:     IDXDISCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 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
```

tables.sql

```
--  File:     TABLES.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates TPC-C tables


use tpcc
go


--
--  Remove all existing TPC-C tables
--

if exists ( select name from sysobjects where name = 'warehouse' )
             drop table warehouse
go
if exists ( select name from sysobjects where name = 'district' )
             drop table district
go
if exists ( select name from sysobjects where name = 'customer' )
             drop table customer
go
if exists ( select name from sysobjects where name = 'history' )
             drop table 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                                    smallint,
             w_name                                  char(10),
             w_street_1                              char(20),
             w_street_2                              char(20),
             w_city                                  char(20),
             w_state                                 char(2),
             w_zip                                   char(9),
             w_tax                                   numeric(4,4),
             w_ytd                                   numeric(12,2)
) on MSSQL_misc_fg
go

create table district
(
             d_id                                    tinyint,
             d_w_id                                  smallint,
             d_name                                  char(10),
             d_street_1                              char(20),
             d_street_2                              char(20),
             d_city                                  char(20),
             d_state                                 char(2),
             d_zip                                   char(9),
             d_tax                                   numeric(4,4),
             d_ytd                                   numeric(12,2),
             d_next_o_id                             int
) on MSSQL_misc_fg
go

create table customer
(
             c_id                                    int,
             c_d_id                                  tinyint,
             c_w_id                                  smallint,
             c_first                                 char(16),
             c_middle                                char(2),
             c_last                                  char(16),
             c_street_1                              char(20),
             c_street_2                              char(20),
             c_city                                  char(20),
             c_state                                 char(2),
             c_zip                                   char(9),
             c_phone                                 char(16),
             c_since                                 datetime,
             c_credit                                char(2),
             c_credit_lim            numeric(12,2),
             c_discount                              numeric(4,4),
             c_balance                               numeric(12,2),
             c_ytd_payment           numeric(12,2),
             c_payment_cnt           smallint,
             c_delivery_cnt                          smallint,
             c_data                                  char(500)
) on MSSQL_cs_fg
go

create table history
(
             h_c_id                                  int,
             h_c_d_id                                tinyint,
             h_c_w_id                                smallint,
             h_d_id                                  tinyint,
             h_w_id                                  smallint,
             h_date                                  datetime,
             h_amount                                numeric(6,2),
             h_data                                  char(24)
) on MSSQL_misc_fg
go

create table new_order
(
             no_o_id                                 int,
             no_d_id                                 tinyint,
             no_w_id                                 smallint
) on MSSQL_misc_fg
go

create table orders
(
             o_id                                    int,
             o_d_id                                  tinyint,
             o_w_id                                  smallint,
```

```
            o_c_id                                          int,
            o_entry_d                       datetime,
            o_carrier_id        tinyint,
            o_ol_cnt                        tinyint,
            o_all_local                     tinyint
) on MSSQL_misc_fg
go

create table order_line
(
            ol_o_id                                         int,
            ol_d_id                                         tinyint,
            ol_w_id                                         smallint,
            ol_number                       tinyint,
            ol_i_id                                         int,
            ol_supply_w_id                  smallint,
            ol_delivery_d       datetime,
            ol_quantity                     smallint,
            ol_amount                       numeric(6,2),
            ol_dist_info        char(24)
) on MSSQL_misc_fg
go

create table item
(
            i_id                                            int,
            i_im_id                                         int,
            i_name                                          char(24),
            i_price                                         numeric(5,2),
            i_data                                          char(50)
) on MSSQL_misc_fg
go

create table stock
(
            s_i_id                                          int,
            s_w_id                                          smallint,
            s_quantity                      smallint,
            s_dist_01                       char(24),
            s_dist_02                       char(24),
            s_dist_03                       char(24),
            s_dist_04                       char(24),
            s_dist_05                       char(24),
            s_dist_06                       char(24),
            s_dist_07                       char(24),
            s_dist_08                       char(24),
            s_dist_09                       char(24),
            s_dist_10                       char(24),
            s_ytd                                           int,
            s_order_cnt                     smallint,
            s_remote_cnt        smallint,
            s_data                                          char(50)
) on MSSQL_cs_fg
go
```

dbopt1.sql

```
--  File:     DBOPT1.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Sets database options for 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
```

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       rows
from         sysindexes
where        id            = object_id("warehouse")
go

print        'DISTRICT TABLE = (10 * No of warehouses)'

select       rows
from         sysindexes
where        id            =object_id("district")
go

print        'ITEM TABLE = 100,000'

select       rows
from         sysindexes
where        id            =object_id("item")
go

print        'CUSTOMER TABLE = (30,000 * No of warehouses)'

select       rows
from         sysindexes
where        id            =object_id("customer")
go

print 'ORDERS TABLE = (30,000 * No of warehouses)'

select       rows
from         sysindexes
where        id            =object_id("orders")
go

print        'HISTORY TABLE = (30,000 * No of warehouses)'

select       rows
from         sysindexes
where        id            =object_id("history")
go

print        'STOCK TABLE = (100,000 * No of warehouses)'

select       rows
from         sysindexes
where        id            =object_id("stock")
go

print        'ORDER_LINE TABLE = (300,000 * No of warehouses + some change)'

select       rows
from         sysindexes
```

```
where        id           =object_id("order_line")
go

print        'NEW_ORDER TABLE = (9000 * No of warehouses)'

select       rows
from         sysindexes
where        id           =object_id("new_order")
go

--           *************
--
--           Check indices
--
--           *************

print '**************Index Check***************'

use tpcc
go

sp_helpindex customer
go

sp_helpindex stock
go

sp_helpindex district
go

sp_helpindex item
go

sp_helpindex new_order
go

sp_helpindex orders
go

sp_helpindex order_line
go

sp_helpindex warehouse
go
```

version.sql

```
--  File:     VERSION.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Extracts current version of SQL Server


use master
go

SELECT       CONVERT(char(20), SERVERPROPERTY('ProductVersion'))
go

SELECT       CONVERT(char(20), SERVERPROPERTY('ProductLevel'))
go

SELECT       CONVERT(char(30), getdate(),9)
go
```

setup.vbs

```
'---------------------------------------------------------------------------
---------
'---  FILE:       SETUP.VBS
'---              Microsoft TPC-C Kit Ver. 4.41
'---              Copyright Microsoft, 2001
'---              All Rights Reserved
'---
'---  PURPOSE:    This module performs the tasks to create and populate a TPC-C
database
'---
'---------------------------------------------------------------------------
---------
'-----------------------------------------
'--- open an windows scripting object
'-----------------------------------------
set WshShell = CreateObject("WScript.Shell")
'-------------------------------------------------
'--- before we go any further, make sure that
'--- we are running Windows Scripting Host 5.6
'--- or higher
'-------------------------------------------------
If wScript.Version < 5.6 Then
             wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
             wScript.Echo
"!!                                                                    !!"
             wScript.Echo "!! You do not have the proper version of the Windows
Scripting Host   !!"
             wScript.Echo "!! installed.  Please install the latest Windows
Scripting Host from  !!"
             wScript.Echo "!! ..\tools\wsh\scripten.exe and restart
setup.                       !!"
             wScript.Echo
"!!                                                                    !!"
             wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
             wScript.Quit
End If
'-----------------------------------------
'--- display banner message
'-----------------------------------------
wScript.Echo
"*******************************************************************************"
wScript.Echo "*
*"
wScript.Echo "*  Microsoft TPC-C Benchmark Kit Ver. 4.41 - Setup
*"
wScript.Echo "*
*"
wScript.Echo
"*******************************************************************************"
'-------------------------------------------------
'--- define function to check for any error messages
'-------------------------------------------------
Function CheckSQLOutput(SQL_Out)
             ErrorFlag = 0
             Set SQL_fso = CreateObject("Scripting.FileSystemObject")
             If SQL_fso.FileExists(SQL_Out) Then
                          Set SQL_Out_File = SQL_fso.OpenTextFile(SQL_Out,1)
                          Do While SQL_Out_File.AtEndOfStream <> True
                                       SQL_Line = SQL_Out_File.ReadLine
                                       'first check to see if the output
contains a message about the login password
                                       If InStr(SQL_Line, "Login failed") Then
                                                    'display the messages and
get out of here
                                                    ErrorFlag = 1
                                                    wScript.Echo "The login
for userid 'sa' failed."
                                                    wScript.Echo "Please
restart SETUP with the correct password."
                                       Else
                                                    If InStr(SQL_Line, "Msg")
Then
                                                                 'find out
where the "Msg" indicator is in the line
                                                                 LocMsg =
InStr(SQL_Line, "Msg")
                                                                 'find out
where the comma is after the error code
                                                                 LocComma =
InStr(SQL_Line, ",")
                                                                 'now isolate
the error code
                                                                 ErrorCode =
Mid(SQL_Line, (LocMsg + 4), (LocComma - (LocMsg + 4)))
                                                                 Select Case
ErrorCode

             Case " 170"
                          ErrorFlag = 1
                          wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
                          wScript.Echo "Syntax Error."
                          wScript.Echo "SQL Server Error 170."
                          wScript.Echo "Check CREATEDB.SQL."
                          wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

             Case "1801"
                          ErrorFlag = 1
                          wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
                          wScript.Echo "Database 'tpcc' already exists."
                          wScript.Echo "SQL Server Error 1801."
                          wScript.Echo "Check CREATEDB.SQL."
                          wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

             Case "1802"
                          ErrorFlag = 1
                          wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
                          wScript.Echo "CREATE DATABASE failed."
                          wScript.Echo "SQL Server Error 1802."
                          wScript.Echo "Check CREATEDB.SQL."
                          wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

             Case "1921"
                          ErrorFlag = 1
                          wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
                          wScript.Echo "CREATE INDEX failed."
                          wScript.Echo "SQL Server Error 1921."
                          wScript.Echo "Check " & SQL_Out & "."
                          wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

             Case "3013"
                                                    ErrorFlag = 1
                                                    wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
                          wScript.Echo "BACKUP DATABASE is terminating abnormally."
                          wScript.Echo "SQL Server Error 3013."
                          wScript.Echo "Check the SQL Server error log for more details."
                          wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

             Case "3201"
                                                    ErrorFlag = 1
                                                    wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
                          wScript.Echo "Cannot open backup device."
```

```
            wScript.Echo "Device error or device off-line."

            wScript.Echo "SQL Server Error 3201."

            wScript.Echo "See the SQL Server error log for more details."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case "5105"
                                        ErrorFlag = 1
                                        wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "Device Activation Error."

            wScript.Echo "SQL Server Error 5105."

            wScript.Echo "Check CREATEDB.SQL."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case "5170"

            ErrorFlag = 1

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "Cannot create one or more files because it already
exists."

            wScript.Echo "SQL Server Error 5170."

            wScript.Echo "Check CREATEDB.SQL."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case "15010","15012"

            ErrorFlag = 0

            Case "15069"

            ErrorFlag = 1

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "One or more users are using the database."

            wScript.Echo "The requested operation cannot be completed."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            Case Else

            ErrorFlag = 1

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"

            wScript.Echo "An error occurred."

            wScript.Echo "SQL Server Error Code: " & ErrorCode & "."

            wScript.Echo "Check " & SQL_Out & " for more information."

            wScript.Echo
"!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!"
                                                            End Select
                                                End If
                                    End If
                        Loop
                        SQL_Out_File.Close
            End If
            CheckSQLOutput = ErrorFlag
End Function
'------------------------------------------
'--- end function
'------------------------------------------
'---------------------------------------------------------
'--- define function to prompt for user input if necessary
'---------------------------------------------------------
Function GetUserInput(UserInput)
            Select Case UserInput
                        Case "ServerName"
                                    '--- pre-fill the prompt with the
machine name
                                    TempServerName =
WshShell.ExpandEnvironmentStrings("%COMPUTERNAME%")
                                    '--- prompt the use for the setup
particulars
                                    TempResponse = InputBox("Enter your
server name","TPC-C Setup",TempServerName)
                                    Do While TempResponse = ""
                                                rc = MsgBox ("You must
enter a valid server name.",21)
                                                If rc = 2 Then
                                                            wScript.Echo
""
                                                            wScript.Echo
"TPC-C Setup cancelled by user."
                                                            wScript.Quit
                                                End If
                                                TempResponse =
WshShell.ExpandEnvironmentStrings("%COMPUTERNAME%")
                                                TempResponse =
InputBox("Enter your server name","TPC-C Setup",TempServerName)
                                    Loop
                        Case "saPassword"
                                    TempResponse = InputBox("Enter the 'sa'
password")
                        Case "NumberWarehouses"
                                    TempResponse = InputBox("Enter the
number of warehouses to build","TPC-C Setup")
                                    Do While TempResponse = ""
                                                rc = MsgBox ("You must
enter a value for Number of Warehouses.",21)
                                                If rc = 2 Then
                                                            wScript.Echo
""
                                                            wScript.Echo
"TPC-C Setup cancelled by user."
                                                            wScript.Quit
                                                End If
                                                TempResponse =
InputBox("Enter the number of warehouses to build","TPC-C Setup")
                                    Loop
                        Case "BuildOption"
                                    TempResponse = InputBox("Build Option" &
Chr(13) &
"(full,builddb,objects,objectsfull,bulkload,bulkloadfull,backup)","TPC-C
Setup","full")
                                    Flag = 0
                                    Do While Flag = 0
                                                Select Case TempResponse
                                                            Case
"full","Full","FULL"

            TempResponse = "full"

            Flag = 1
                                                            Case
"builddb","BuildDB","Builddb","BUILDDB"

            TempResponse = "builddb"

            Flag = 1
                                                            Case
"objects","Objects","OBJECTS"

            TempResponse = "objects"

            Flag = 1
                                                            Case
"objectsfull","ObjectsFull","Objectsfull","OBJECTSFULL"

            TempResponse = "objectsfull"

            Flag = 1
                                                            Case
"bulkload","BulkLoad","Bulkload","BULKLOAD"

            TempResponse = "bulkload"

            Flag = 1
                                                            Case
"bulkloadfull","BulkLoadFull","Bulkloadfull","BULKLOADFULL"

            TempResponse = "bulkloadfull"

            Flag = 1
                                                            Case
"backup","Backup","BACKUP"

            TempResponse = "backup"

            Flag = 1
                                                            Case Else

            rc = MsgBox ("Invalid Database Build Option.",21)

            If rc = 2 Then

            wScript.Echo ""

            wScript.Echo "TPC-C Setup cancelled by user."

            wScript.Quit

            End If

            Flag = 0

            TempResponse = InputBox("Build Option" & Chr(13) &
"(full,builddb,objects,objectsfull,bulkload,bulkloadfull,backup)",,"full")

                                                End Select
                                    Loop
                        Case "DatabaseType"
                                    TempResponse = InputBox("Database Type"
& Chr(13) & "(normal or scale_down)","TPC-C Setup","normal")
                                    '--- set flag
                                    Flag = 0
                                    Do While Flag = 0
                                                Select Case TempResponse
                                                            Case
"normal","Normal","NORMAL"

            TempResponse = "0"

            Flag = 1
                                                            Case
"scale_down","Scale_Down","Scale_down","SCALE_DOWN"

            TempResponse = "1"

            Flag = 1
                                                            Case Else

            rc = MsgBox ("Invalid Database Type.",21)

            If rc = 2 Then

            wScript.Echo ""

            wScript.Echo "TPC-C Setup cancelled by user."

            wScript.Quit

            End If

            Flag = 0

            TempResponse = InputBox("Database Type" & Chr(13) & "(normal or
scale_down)",,"normal")
                                                End Select
                                    Loop
            End Select
            GetUserInput = TempResponse
End Function
'------------------------------------------
'--- end function
'------------------------------------------
'-------------------------------------------------
'--- Initialize an array of the TPC-C table names
```

```
'-------------------------------------------------
Dim TableArray(8)
TableArray(0) = "warehouse"
TableArray(1) = "district"
TableArray(2) = "customer"
TableArray(3) = "history"
TableArray(4) = "new_order"
TableArray(5) = "orders"
TableArray(6) = "order_line"
TableArray(7) = "item"
TableArray(8) = "stock"
'-------------------------------------------------------
'--- Initialize an array of the TPC-C build log file names
'-------------------------------------------------------
Dim LogFileArray(21)
LogFileArray(0)  = "version.log"
LogFileArray(1)  = "removedb.log"
LogFileArray(2)  = "createdb.log"
LogFileArray(3)  = "tables.log"
LogFileArray(4)  = "dbopt1.log"
LogFileArray(5)  = "idxordcl.log"
LogFileArray(6)  = "idxitmcl.log"
LogFileArray(7)  = "idxwarcl.log"
LogFileArray(8)  = "idxcuscl.log"
LogFileArray(9)  = "idxnodcl.log"
LogFileArray(10) = "idxdiscl.log"
LogFileArray(11) = "idxstkcl.log"
LogFileArray(12) = "idxodlcl.log"
LogFileArray(13) = "idxcusnc.log"
LogFileArray(14) = "idxhiscl.log"
LogFileArray(15) = "idxordnc.log"
LogFileArray(16) = "bulkload.log"
LogFileArray(17) = "dbopt2.log"
LogFileArray(18) = "nurand_load.log"
LogFileArray(19) = "backupdev.log"
LogFileArray(20) = "backupdev.log"
LogFileArray(21) = "verifyload.log"
'-----------------------------------------
'--- open a file system object
'-----------------------------------------
Set fs = CreateObject("Scripting.FileSystemObject")
'-----------------------------------------
'--- grab the current directory value
'-----------------------------------------
SetupDirectory = WshShell.CurrentDirectory & "\"
'SetupDirectory = "C:\MSTPCC.441\"
'-----------------------------------------
'--- now calculate the other directories
'-----------------------------------------
ACIDDirectory = LEFT(SetupDirectory,(LEN(SetupDirectory)-6))
ScriptDirectory = SetupDirectory & "SCRIPTS\"
LogDirectory = SetupDirectory & "LOGS\"
'-------------------------------------------------------------------
'--- now determine if the user passed us any parameters.
'--- the order should be ServerName, sa Password, Number of Warehouses,
'--- Build Option, and Database Type
'-------------------------------------------------------------------
Set objArgs = wScript.Arguments
Select Case objArgs.Length
        Case 0
                '-----------------------------------------
                '--- get the server name
                '-----------------------------------------
                ServerName = GetUserInput("ServerName")
                '-----------------------------------------
                '--- get the sa password
                '-----------------------------------------
                saPassword = GetUserInput("saPassword")
                '-----------------------------------------
                '--- get the number of warehouses
                '-----------------------------------------
                NumberWarehouses = GetUserInput("NumberWarehouses")
                '-----------------------------------------
                '--- get the build option
                '-----------------------------------------
                BuildOption = GetUserInput("BuildOption")
                '-----------------------------------------
                '--- get the database type
                '-----------------------------------------
                DatabaseType = GetUserInput("DatabaseType")
        Case 1
                '-----------------------------------------------------
-
                '--- assume that the server name was passed correctly
                '-----------------------------------------------------
-
                '-----------------------------------------
                '--- store the server name
                '-----------------------------------------
                ServerName = objArgs(0)
                '-----------------------------------------
                '--- get the sa password
                '-----------------------------------------
                saPassword = GetUserInput("saPassword")
                '-----------------------------------------
                '--- get the number of warehouses
                '-----------------------------------------
                NumberWarehouses = GetUserInput("NumberWarehouses")
                '-----------------------------------------
                '--- get the build option
                '-----------------------------------------
                BuildOption = GetUserInput("BuildOption")
                '-----------------------------------------
                '--- get the database type
                '-----------------------------------------
                DatabaseType = GetUserInput("DatabaseType")
                If DatabaseType = "scale_down" or DatabaseType =
"Scale_Down" or DatabaseType = "Scale_down" Then
                        DatabaseType = 1
                Else
                        DatabaseType = 0
                End If
        Case 2
                '-----------------------------------------------------
----------------
                '--- assume that the server name and sa password was
passed correctly
                '-----------------------------------------------------
----------------
                '-----------------------------------------
                '--- store the server name
                '-----------------------------------------
                ServerName = objArgs(0)
                '-----------------------------------------
                '--- store the sa password
                '-----------------------------------------
                saPassword = objArgs(1)
                '-----------------------------------------
                '--- get the number of warehouses
                '-----------------------------------------
                NumberWarehouses = GetUserInput("NumberWarehouses")
                '-----------------------------------------
                '--- get the build option
                '-----------------------------------------
                BuildOption = GetUserInput("BuildOption")
                '-----------------------------------------
                '--- get the database type
                '-----------------------------------------
                DatabaseType = GetUserInput("DatabaseType")
                If DatabaseType = "scale_down" or DatabaseType =
"Scale_Down" or DatabaseType = "Scale_down" Then
                        DatabaseType = 1
                Else
                        DatabaseType = 0
                End If
        Case 3
                '-----------------------------------------------------
-----------------------------------
                '--- assume that the server name,sa password, and
number of warehouses was passed correctly
                '-----------------------------------------------------
-----------------------------------
                '-----------------------------------------
                '--- store the server name
                '-----------------------------------------
                ServerName = objArgs(0)
                '-----------------------------------------
                '--- store the sa password
                '-----------------------------------------
                saPassword = objArgs(1)
                '-----------------------------------------
                '--- store the number of warehouses
                '-----------------------------------------
                NumberWarehouses = objArgs(2)
                '-----------------------------------------
                '--- get the build option
                '-----------------------------------------
                BuildOption = GetUserInput("BuildOption")
                '-----------------------------------------
                '--- get the database type
                '-----------------------------------------
                DatabaseType = GetUserInput("DatabaseType")
                If DatabaseType = "scale_down" or DatabaseType =
"Scale_Down" or DatabaseType = "Scale_down" Then
                        DatabaseType = 1
                Else
                        DatabaseType = 0
                End If
        Case 4
                '-----------------------------------------------------
----------------------------------------------
                '--- assume that the server name,sa password,number
of warehouses, and build option was passed correctly
                '-----------------------------------------------------
----------------------------------------------
                '-----------------------------------------
                '--- store the server name
                '-----------------------------------------
                ServerName = objArgs(0)
                '-----------------------------------------
                '--- store the sa password
                '-----------------------------------------
                saPassword = objArgs(1)
                '-----------------------------------------
                '--- store the number of warehouses
                '-----------------------------------------
                NumberWarehouses = objArgs(2)
                '-----------------------------------------
                '--- store the build option
                '-----------------------------------------
                BuildOption = objArgs(3)
                '-----------------------------------------
                '--- get the database type
                '-----------------------------------------
                DatabaseType = GetUserInput("DatabaseType")
                If DatabaseType = "scale_down" or DatabaseType =
"Scale_Down" or DatabaseType = "Scale_down" Then
                        DatabaseType = 1
                Else
                        DatabaseType = 0
                End If
        Case 5
                '-----------------------------------------------------
--
                '--- assume all the parameters were passed in
correctly
                '-----------------------------------------------------
--
                '-----------------------------------------
                '--- store the server name
                '-----------------------------------------
                ServerName = objArgs(0)
                '-----------------------------------------
                '--- store the sa password
                '-----------------------------------------
                saPassword = objArgs(1)
                '-----------------------------------------
                '--- store the number of warehouses
                '-----------------------------------------
                NumberWarehouses = objArgs(2)
                '-----------------------------------------
                '--- store the build option
                '-----------------------------------------
                BuildOption = objArgs(3)
                '-----------------------------------------
                '--- get the database type
                '-----------------------------------------
                DatabaseType = objArgs(4)
                If DatabaseType = "scale_down" or DatabaseType =
"Scale_Down" or DatabaseType = "Scale_down" Then
                        DatabaseType = 1
                Else
                        DatabaseType = 0
                End If
End Select
'-------------------------------------------------------------------
'--- now that we have all the variables filled in, let's get to work
'--- cleanup any old .err files
'-------------------------------------------------------------------
For i = 0 to 8
        If fs.FileExists(LogPath & TableArray(i) & ".err") Then
                fs.DeleteFile LogPath & TableArray(i) & ".err"
```

```
            End If
Next
For i = 0 to 21
            If fs.FileExists(LogPath & LogFileArray(i)) Then
                        fs.DeleteFile LogPath & LogFileArray(i)
            End If
Next
'--------------------------------------------------------------------
'--- now grab the version of SQL Server you are running this against
'--------------------------------------------------------------------
Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" & ServerName & " -
e -i" & ScriptDirectory & "utility\version.sql -o" & LogDirectory &
"version.log")
Do While oExec.Status = 0
     wScript.Sleep 100
Loop
rc = CheckSQLOutput(LogDirectory & "version.log")
If rc <> 0 Then
            wScript.Quit
End If
If (BuildOption = "full" OR BuildOption = "builddb") Then
            wScript.Echo "Removing any existing TPCC database and backup
devices..."
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & NumberWarehouses &
".war\database\removedb.sql -o" & LogDirectory & "removedb.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "removedb.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Building database files and database..."
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & NumberWarehouses &
".war\database\createdb.sql -o" & LogDirectory & "createdb.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "createdb.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
End If
'-------------------------------------------
'--- build tables and stored procedures
'-------------------------------------------
If (BuildOption = "full" OR BuildOption = "builddb" _
    OR BuildOption = "objects" OR BuildOption = "objectsfull") Then
            wScript.Echo "Creating TPC-C database tables..."
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & NumberWarehouses &
".war\ddl\tables.sql -o" & LogDirectory & "tables.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "tables.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Creating database objects..."
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & "dml\neword.sql -o" & LogDirectory &
"sp_neword.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_neword.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & "dml\payment.sql -o" & LogDirectory &
"sp_payment.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_payment.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & "dml\ordstat.sql -o" & LogDirectory &
"sp_ordstat.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_ordstat.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & "dml\delivery.sql -o" & LogDirectory &
"sp_delivery.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_delivery.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & "dml\stocklev.sql -o" & LogDirectory &
"sp_stocklev.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_stocklev.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & "dml\version.sql -o" & LogDirectory &
"sp_version.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "sp_version.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Database object creation complete..."
End If
If (BuildOption = "full" OR BuildOption = "builddb" _
    OR BuildOption = "objects" OR BUildOption = "objectsfull" _
    OR BuildOption = "bulkload" OR BuildOption = "bulkloadfull") Then
            wScript.Echo "Setting database options before load..."
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & "utility\dbopt1.sql -o" & LogDirectory
& "dbopt1.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "dbopt1.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            '------------------------------------------------------------
            '--- before we start tpccldr.exe, check the registry
            '--- to ensure that the Shared Memory Protocol is off.
            '--- if it is on, store the setting so we can return
            '--- the system to the pre-tpccldr state.
            '------------------------------------------------------------
            SharedMemoryRegKey =
WshShell.RegRead("HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSSQLServer\Client\Share
dMemoryOn")
            If SharedMemoryRegKey = 1 Then
                        WshShell.RegWrite
"HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSSQLServer\Client\SharedMemoryOn", 0,
"REG_DWORD"
            End If
            wScript.Echo "Beginning data load and index creation..."
            CMD_String = SetupDirectory & "\loader\bin\tpccldr.exe"
            CMD_String = CMD_String & " -S" & ServerName
            CMD_String = CMD_String & " -Usa"
            CMD_String = CMD_String & " -P" & saPassword
            CMD_String = CMD_String & " -W" & NumberWarehouses
            CMD_String = CMD_String & " -f" & LogDirectory & "bulkload.log"
            CMD_String = CMD_String & " -L" & LogDirectory
            CMD_String = CMD_String & " -d" & ScriptDirectory &
NumberWarehouses & ".war\ddl"
            CMD_String = CMD_String & " -c" & DatabaseType
            oExec = WshShell.Run(CMD_String, 2, true)
            '------------------------------------------------------------
            '--- now that the loader is finished, put the
            '--- SharedMemoryOn registry key back to its original
            '--- value.
            '------------------------------------------------------------
            If SharedMemoryRegKey = 1 Then
                        WshShell.RegWrite
"HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSSQLServer\Client\SharedMemoryOn", 1,
"REG_DWORD"
            End If
            wScript.Echo "Setting database options after load..."
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & "utility\dbopt2.sql -o" & LogDirectory
& "dbopt2.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "dbopt2.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Data load and index creation complete."
            '----------------------------------------
            '--- now parse the index creation logs
            '--- to see if there were any errors
            '--- there.
            '----------------------------------------
            For i = 5 to 15
                        rc = CheckSQLOutput(LogDirectory & LogFileArray(i))
                        If rc <> 0 Then
                                    wScript.Quit
                        End If
            Next
            wScript.Echo "Calculating initial database space usage...."
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ACIDDirectory & "space\scripts\spused.sql -o" &
ACIDDirectory & "space\spused.ver")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ACIDDirectory & "space\scripts\splog.sql -o" &
ACIDDirectory & "space\splog.ver")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ACIDDirectory & "space\scripts\spfiles.sql -o" &
ACIDDirectory & "space\spfiles.ver")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            '----------------------------------------
            '--- now that the loader is finished
            '--- check the .err files and if they
            '--- are of zero length, delete them.
            '----------------------------------------
            Set fsErr = CreateObject("Scripting.FileSystemObject")
            Set fErr = fsErr.GetFolder(LogDirectory)
            Set fcErr = fErr.Files
            For Each f1 In fcErr
                        If f1.Type = "ERR File" Then
                                    If f1.Size = 0 Then
                                                f1.Delete
                                    End If
                        End If
            Next
            Set fcErr = Nothing
            Set fErr = Nothing
            Set fsErr = Nothing
End If
If (BuildOption = "full" _
    OR BUildOption = "objectsfull" _
    OR BuildOption = "bulkloadfull" _
    OR BuildOption = "backup") Then
            wScript.Echo "Creating Backup Device(s)..."
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & NumberWarehouses &
".war\database\backupdev.sql -o" & LogDirectory & "backupdev.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "backupdev.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
```

```
            wScript.Echo "Backing up database..."
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & NumberWarehouses &
".war\database\backup.sql -o" & LogDirectory & "backup.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "backup.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Database backup complete."
End If
If (BuildOption = "full" _
    OR BUildOption = "objectsfull" _
    OR BuildOption = "bulkloadfull") Then
            wScript.Echo "Verifying TPC-C database load..."
            Set oExec = WshShell.Exec("osql -Usa -P" & saPassword & " -S" &
ServerName & " -e -i" & ScriptDirectory & "utility\verifytpccload.sql -o" &
LogDirectory & "verifyload.log")
            Do While oExec.Status = 0
                 wScript.Sleep 100
            Loop
            rc = CheckSQLOutput(LogDirectory & "verifyload.log")
            If rc <> 0 Then
                        wScript.Quit
            End If
            wScript.Echo "Check logs\verifyload.log to verify database load."
End If
'----------------------------------------
'--- display banner message
'----------------------------------------
wScript.Echo
"*******************************************************************************"
wScript.Echo "*
*"
wScript.Echo "*  Microsoft TPC-C Benchmark Kit Ver. 4.41 - Setup Complete
*"
wScript.Echo "*
*"
wScript.Echo
"*******************************************************************************"
```

Stored Procedures

delivery.sql

```
--  File:     DELIVERY.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates delivery transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists (select name from sysobjects where name = 'tpcc_delivery' )
            drop procedure tpcc_delivery
go

create proc tpcc_delivery  @w_id           smallint,

                                                      @o_carrier_id   smallint
as


declare @d_id tinyint,
        @o_id int,
        @c_id int,
        @total            numeric(12,2),
        @oid1 int,
        @oid2 int,
        @oid3 int,
        @oid4 int,
        @oid5 int,
        @oid6 int,
        @oid7 int,
        @oid8 int,
        @oid9 int,
        @oid10            int

select @d_id = 0

begin tran d

            while (@d_id < 10)
            begin

                  select            @d_id  = @d_id + 1,
                                    @total = 0,
                                    @o_id  = 0

                       select       top 1
                                    @o_id        = no_o_id
                       from         new_order (serializable updlock)
                       where        no_w_id      = @w_id and
                                    no_d_id      = @d_id
                       order        by no_o_id asc

                       if (@@rowcount <> 0)
                            begin

--  claim the order for this district

                                    delete       new_order
                                    where        no_w_id      = @w_id and
                                                 no_d_id      = @d_id and
                                                 no_o_id      = @o_id

--  set carrier_id on this order (and get customer id)

                                    update       orders
                                    set          o_carrier_id =
@o_carrier_id,
                                                 @c_id
            = o_c_id
                                    where        o_w_id
            = @w_id and
                                                 o_d_id
            = @d_id and
                                                 o_id
            = @o_id

--  set date in all lineitems for this order (and sum amounts)

                                    update       order_line
                                    set          ol_delivery_d= getdate(),
                                                 @total
            = @total + ol_amount
                                    where        ol_w_id
            = @w_id and
                                                 ol_d_id
            = @d_id and
                                                 ol_o_id
            = @o_id

--  accummulate lineitem amounts for this order into customer

                                    update       customer
                                    set          c_balance    = c_balance +
@total,
                                                 c_delivery_cnt
            = c_delivery_cnt + 1
                                    where        c_w_id
            = @w_id and
                                                 c_d_id
            = @d_id and
                                                 c_id
            = @c_id

                        end

            select @oid1 = case @d_id when  1  then @o_id else @oid1 end,
              @oid2 = case @d_id when  2  then @o_id else @oid2 end,
              @oid3 = case @d_id when  3  then @o_id else @oid3 end,
              @oid4 = case @d_id when  4  then @o_id else @oid4 end,
              @oid5 = case @d_id when  5  then @o_id else @oid5 end,
              @oid6 = case @d_id when  6  then @o_id else @oid6 end,
              @oid7 = case @d_id when  7  then @o_id else @oid7 end,
              @oid8 = case @d_id when  8  then @o_id else @oid8 end,
              @oid9 = case @d_id when  9  then @o_id else @oid9 end,
              @oid10 = case @d_id when 10 then @o_id else @oid10 end

    end

commit tran d

-- return delivery data to client

select @oid1,
       @oid2,
       @oid3,
       @oid4,
       @oid5,
       @oid6,
       @oid7,
       @oid8,
       @oid9,
       @oid10

go
```

neword.sql

```
--  File:     NEWORD.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates new order transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists ( select name from sysobjects where name = 'tpcc_neworder' )
            drop procedure tpcc_neworder
go

create proc tpcc_neworder
                                                                  @w_id
smallint,
                                                                  @d_id
tinyint,
                                                                  @c_id
int,
                                                                  @o_ol_cnt
tinyint,
                                                                  @o_all_local
tinyint,
                                                                  @i_id1  int =
0, @s_w_id1  smallint = 0, @ol_qty1  smallint = 0,
                                                                  @i_id2  int =
0, @s_w_id2  smallint = 0, @ol_qty2  smallint = 0,
                                                                  @i_id3  int =
0, @s_w_id3  smallint = 0, @ol_qty3  smallint = 0,
                                                                  @i_id4  int =
0, @s_w_id4  smallint = 0, @ol_qty4  smallint = 0,
                                                                  @i_id5  int =
0, @s_w_id5  smallint = 0, @ol_qty5  smallint = 0,
                                                                  @i_id6  int =
0, @s_w_id6  smallint = 0, @ol_qty6  smallint = 0,
                                                                  @i_id7  int =
0, @s_w_id7  smallint = 0, @ol_qty7  smallint = 0,
                                                                  @i_id8  int =
0, @s_w_id8  smallint = 0, @ol_qty8  smallint = 0,
                                                                  @i_id9  int =
0, @s_w_id9  smallint = 0, @ol_qty9  smallint = 0,
                                                                  @i_id10 int =
0, @s_w_id10 smallint = 0, @ol_qty10 smallint = 0,
                                                                  @i_id11 int =
0, @s_w_id11 smallint = 0, @ol_qty11 smallint = 0,
                                                                  @i_id12 int =
0, @s_w_id12 smallint = 0, @ol_qty12 smallint = 0,
                                                                  @i_id13 int =
0, @s_w_id13 smallint = 0, @ol_qty13 smallint = 0,
                                                                  @i_id14 int =
0, @s_w_id14 smallint = 0, @ol_qty14 smallint = 0,
                                                                  @i_id15 int =
0, @s_w_id15 smallint = 0, @ol_qty15 smallint = 0


as
declare      @w_tax          numeric(4,4),
```

```
        @d_tax          numeric(4,4),
        @c_last         char(16),
        @c_credit       char(2),
        @c_discount     numeric(4,4),
        @i_price        numeric(5,2),
        @i_name         char(24),
        @i_data         char(50),
        @o_entry_d      datetime,
        @remote_flag    int,
        @s_quantity     smallint,
        @s_data         char(50),
        @s_dist         char(24),
             @li_no          int,
             @o_id                      int,
             @commit_flag    tinyint,
        @li_id          int,
        @li_s_w_id      smallint,
        @li_qty         smallint,
             @ol_number    int,
             @c_id_local   int

begin

begin transaction n

--  get district tax and next availible order id and update
--  plus initialize local variables

             update       district
             set          @d_tax       = d_tax,
                          @o_id        = d_next_o_id,
                          d_next_o_id  = d_next_o_id + 1,
                          @o_entry_d   = getdate(),
                          @li_no       = 0,
                          @commit_flag = 1
             where        d_w_id       = @w_id and
                          d_id         = @d_id

--  process orderlines

             while (@li_no < @o_ol_cnt)
             begin

                          select @li_no = @li_no + 1

--  set i_id, s_w_id, and qty for this lineitem

                          select       @li_id = case @li_no
                                                when 1 then @i_id1
                                                when 2 then @i_id2
                                                when 3 then @i_id3
                                                when 4 then @i_id4
                                                when 5 then @i_id5
                                                when 6 then @i_id6
                                                when 7 then @i_id7
                                                when 8 then @i_id8
                                                when 9 then @i_id9
                                                when 10 then @i_id10
                                                when 11 then @i_id11
                                                when 12 then @i_id12
                                                when 13 then @i_id13
                                                when 14 then @i_id14
                                                when 15 then @i_id15
                                                end,

                                       @li_s_w_id = case @li_no
                                                when 1 then @s_w_id1
                                                when 2 then @s_w_id2
                                                when 3 then @s_w_id3
                                                when 4 then @s_w_id4
                                                when 5 then @s_w_id5
                                                when 6 then @s_w_id6
                                                when 7 then @s_w_id7
                                                when 8 then @s_w_id8
                                                when 9 then @s_w_id9
                                                when 10 then
@s_w_id10
                                                when 11 then
@s_w_id11
                                                when 12 then
@s_w_id12
                                                when 13 then
@s_w_id13
                                                when 14 then
@s_w_id14
                                                when 15 then
@s_w_id15
                                                end,

                                       @li_qty = case  @li_no
                                                when 1 then @ol_qty1
                                                when 2 then @ol_qty2
                                                when 3 then @ol_qty3
                                                when 4 then @ol_qty4
                                                when 5 then @ol_qty5
                                                when 6 then @ol_qty6
                                                when 7 then @ol_qty7
                                                when 8 then @ol_qty8
                                                when 9 then @ol_qty9
                                                when 10 then @ol_qty10
                                                when 11 then @ol_qty11
                                                when 12 then @ol_qty12
                                                when 13 then @ol_qty13
                                                when 14 then @ol_qty14
                                                when 15 then @ol_qty15
                                                end

--  get item data (no one updates item)

                          select       @i_price = i_price,
                                       @i_name  = i_name,
                                       @i_data  = i_data
                          from         item (tablock repeatableread)
                          where        i_id = @li_id

--  update stock values

                          update       stock
                          set          s_ytd                     = s_ytd +
@li_qty,
                                       @s_quantity   = s_quantity   =
s_quantity - @li_qty +

case when (s_quantity - @li_qty < 10) then 91 else 0 end,
                                       s_order_cnt  = s_order_cnt + 1,
                                       s_remote_cnt = s_remote_cnt + case when
(@li_s_w_id = @w_id) then 0 else 1 end,
                                       @s_data                   = s_data,
                                       @s_dist                   = case @d_id
                                                                   when 1
then s_dist_01
                                                                   when 2
then s_dist_02
                                                                   when 3
then s_dist_03
                                                                   when 4
then s_dist_04
                                                                   when 5
then s_dist_05
                                                                   when 6
then s_dist_06
                                                                   when 7
then s_dist_07
                                                                   when 8
then s_dist_08
                                                                   when 9
then s_dist_09
                                                                   when 10
then s_dist_10
                                                                   end
                          where        s_i_id                    = @li_id and
                                       s_w_id                    = @li_s_w_id

--  if there actually is a stock (and item) with these ids, go to work

                          if (@@rowcount > 0)
                          begin

--  insert order_line data (using data from item and stock)

                                       insert into order_line values(@o_id,

@d_id,

@w_id,

@li_no,

@li_id,

@li_s_w_id,

'dec 31, 1899',

@li_qty,

@i_price * @li_qty,

@s_dist)

--  send line-item data to client

                                                select       @i_name,
                                                             @s_quantity,
                                                             b_g = case when
( (patindex('%ORIGINAL%',@i_data) > 0) and

(patindex('%ORIGINAL%',@s_data) > 0) )
                                                                  then 'B' else 'G'
end,
                                                             @i_price,
                                                             @i_price * @li_qty

                                       end
                                       else
                                       begin

--  no item (or stock) found - triggers rollback condition

                                                select '',0,'',0,0
                                                select @commit_flag = 0

                                       end
             end

--  get customer last name, discount, and credit rating

                          select       @c_last     = c_last,
                                       @c_discount = c_discount,
                                       @c_credit   = c_credit,
                                       @c_id_local = c_id
                          from         customer (repeatableread)
                          where        c_id                      = @c_id and
                                       c_w_id                    = @w_id and
                                       c_d_id                    = @d_id

--  insert fresh row into orders table

                          insert into orders values (             @o_id,
                                                                       @d_id,
                                                                       @w_id,
                                                                       @c_id_local,
                                                                       @o_entry_d,
                                                                       0,
                                                                       @o_ol_cnt,
                                                                       @o_all_local)

--  insert corresponding row into new-order table

                          insert into new_order values (          @o_id,
                                                                       @d_id,
                                                                       @w_id)

--  select warehouse tax

                          select       @w_tax       = w_tax
                          from         warehouse (repeatableread)
                          where        w_id         = @w_id

                          if (@commit_flag = 1)

                                       commit transaction n
                          else

--  all that work for nuthin!!!

                                       rollback transaction n

--  return order data to client

                          select       @w_tax,
```

```
                        @d_tax,
                        @o_id,
                        @c_last,
                        @c_discount,
                        @c_credit,
                        @o_entry_d,
                        @commit_flag

end

go
```

ordstat.sql

```
--  File:     ORDSTAT.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates order status transaction stored 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        smallint,
                                                     @d_id        tinyint,

                                                     @c_id        int,
                                                     @c_last      char(16) = ''


as

declare @c_balance                      numeric(12,2),
        @c_first                        char(16),
        @c_middle                       char(2),
        @o_id                           int,
        @o_entry_d                      datetime,
        @o_carrier_id                   smallint,
        @cnt                            smallint

begin tran o

if (@c_id = 0)
            begin

--  get customer id and info using last name

                        select      @cnt         = (count(*)+1)/2
                        from        customer (repeatableread)
                        where       c_last       = @c_last and
                                    c_w_id       = @w_id and
                                    c_d_id       = @d_id

                        set         rowcount @cnt

                        select      @c_id                    = c_id,
                                    @c_balance   = c_balance,
                                       @c_first  = c_first,
                                       @c_last   = c_last,
                                       @c_middle = c_middle
                        from        customer (repeatableread)
                        where       c_last                   = @c_last and
                                    c_w_id                   = @w_id and
                                    c_d_id                   = @d_id
                        order       by c_w_id, c_d_id, c_last, c_first

                        set         rowcount 0
            end

            else

            begin

--  get customer info if by id

                        select      @c_balance   = c_balance,
                                    @c_first     = c_first,
                                    @c_middle    = c_middle,
                                    @c_last                  = c_last
                        from        customer (repeatableread)
                        where       c_id                     = @c_id and
                                    c_d_id                   = @d_id and
                                    c_w_id                   = @w_id


                        select      @cnt         = @@rowcount

            end

--  if no such customer

            if (@cnt = 0)
            begin
                        raiserror('Customer not found',18,1)
                        goto custnotfound
            end

--  get order info

            select      @o_id                    = o_id,
                        @o_entry_d   = o_entry_d,
                        @o_carrier_id= o_carrier_id
            from        orders (serializable)
            where       o_c_id                   = @c_id and
                        o_d_id                   = @d_id and
                        o_w_id                   = @w_id
            order       by o_id asc

--  select order lines for the current order

            select      ol_supply_w_id,
                        ol_i_id,
                        ol_quantity,
                        ol_amount,
                        ol_delivery_d
            from        order_line (repeatableread)
            where       ol_o_id = @o_id and
                        ol_d_id = @d_id and
                        ol_w_id = @w_id

custnotfound:

commit tran o

--  return data to client

select      @c_id,
            @c_last,
            @c_first,
            @c_middle,
            @o_entry_d,
            @o_carrier_id,
            @c_balance,
            @o_id

go
```

payment.sql

```
--  File:     PAYMENT.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates payment transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists (select name from sysobjects where name = 'tpcc_payment' )
            drop procedure tpcc_payment
go

create proc tpcc_payment   @w_id           smallint,
                                                     @c_w_id         smallint,
                                                     @h_amount
numeric(6,2),
                                                     @d_id           tinyint,
                                                     @c_d_id         tinyint,
                                                     @c_id           int,
                                                     @c_last         char(16) =
''


as
declare  @w_street_1     char(20),
         @w_street_2     char(20),
         @w_city         char(20),
         @w_state        char(2),
         @w_zip          char(9),
         @w_name         char(10),
         @d_street_1     char(20),
         @d_street_2     char(20),
         @d_city         char(20),
         @d_state        char(2),
         @d_zip          char(9),
         @d_name         char(10),
         @c_first        char(16),
         @c_middle       char(2),
         @c_street_1     char(20),
         @c_street_2     char(20),
         @c_city         char(20),
         @c_state        char(2),
         @c_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  smallint,
               @c_id_local  int

select @screen_data = ''

begin tran p

--  get payment date

              select       @datetime = getdate()

              if (@c_id = 0)
              begin

--  get customer id and info using last name

                           select       @cnt         = count(*)
                           from         customer (repeatableread)
                           where        c_last       = @c_last and
                                        c_w_id       = @c_w_id and
                                        c_d_id       = @c_d_id


                           select       @val = (@cnt + 1) / 2
                           set          rowcount @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. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Creates stock level transaction stored procedure
--
--            Interface Level: 4.10.000

use tpcc
go

if exists (select name from sysobjects where name = 'tpcc_stocklevel' )
            drop procedure tpcc_stocklevel
go

create proc tpcc_stocklevel             @w_id       smallint,
                                        @d_id       tinyint,
                                        @threshhold smallint
as

declare     @o_id_low int,
            @o_id_high int

select      @o_id_low    = (d_next_o_id - 20),
            @o_id_high   = (d_next_o_id - 1)
from        district
where       d_w_id                    = @w_id and
            d_id                      = @d_id

select      count(distinct(s_i_id))
from        stock, order_line
where       ol_w_id                   =  @w_id and
            ol_d_id                   =  @d_id and
            ol_o_id                   between @o_id_low and
                                      @o_id_high and
            s_w_id                    =  ol_w_id and
            s_i_id                    =  ol_i_id and
            s_quantity   <  @threshhold

go
```

Loader Source Code

tpccldr.dsp

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

# TARGTYPE "Win32 (x86) Console Application" 0x0103

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

# Begin Project
# PROP AllowPerConfigDependencies 0
# PROP Scc_ProjName ""$/mstpcc.400/setup/loader/mssql70", QROAAAAA"
# PROP Scc_LocalPath "."
CPP=cl.exe
RSC=rc.exe

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir ".\Release"
# PROP BASE Intermediate_Dir ".\Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir ".\bin"
# PROP Intermediate_Dir ".\objects"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_CONSOLE" /YX /c
# ADD CPP /nologo /MT /W3 /GX /O2 /D "NDEBUG" /D "WIN32" /D "_CONSOLE" /D
"DBNTWIN32" /FD /c
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
/nologo /subsystem:console /machine:I386
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
odbcbcp.lib /nologo /subsystem:console /pdb:none /machine:I386

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir ".\Debug"
# PROP BASE Intermediate_Dir ".\Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ".\bin"
# PROP Intermediate_Dir ".\objects"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D "_CONSOLE"
/YX /c
# ADD CPP /nologo /MTd /W3 /Gm /GX /ZI /Od /D "_DEBUG" /D "WIN32" /D "_CONSOLE"
/D "DBNTWIN32" /FR /FD /c
```

```
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
/nologo /subsystem:console /debug /machine:I386
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
odbcbcp.lib /nologo /subsystem:console /pdb:none /debug /machine:I386

!ENDIF

# Begin Target

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

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

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

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

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

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

SOURCE=.\src\tpccldr.c
# End Source File
# End Group
# Begin Group "Header Files"

# PROP Default_Filter "h;hpp;hxx;hm;inl;fi;fd"
# Begin Source File

SOURCE=.\src\tpcc.h
# End Source File
# End Group
# Begin Group "Resource Files"

# PROP Default_Filter "ico;cur;bmp;dlg;rc2;rct;bin;cnt;rtf;gif;jpg;jpeg;jpe"
# End Group
# End Target
# End Project
```

tpccldr.dsw

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

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

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

Package=<5>
{{{
    begin source code control
    "$/Backup/setup/loader", ZGABAAAA
    .
    end source code control
}}}

Package=<4>
{{{
}}}

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

Global:

Package=<5>
{{{
}}}

Package=<3>
{{{
}}}

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

tpccldr.mak

```
# Microsoft Developer Studio Generated NMAKE File, Format Version 4.10
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Console Application" 0x0103

!IF "$(CFG)" == ""
CFG=tpccldr - Win32 Debug
!MESSAGE No configuration specified.  Defaulting to tpccldr - Win32 Debug.
!ENDIF

!IF "$(CFG)" != "tpccldr - Win32 Release" && "$(CFG)" !=\
 "tpccldr - Win32 Debug"
!MESSAGE Invalid configuration "$(CFG)" specified.
!MESSAGE You can specify a configuration when running NMAKE on this makefile
!MESSAGE by defining the macro CFG on the command line.  For example:
!MESSAGE
!MESSAGE NMAKE /f "tpccldr.mak" CFG="tpccldr - Win32 Debug"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "tpccldr - Win32 Release" (based on "Win32 (x86) Console Application")
!MESSAGE "tpccldr - Win32 Debug" (based on "Win32 (x86) Console Application")
!MESSAGE
!ERROR An invalid configuration is specified.
!ENDIF

!IF "$(OS)" == "Windows_NT"
NULL=
!ELSE
NULL=nul
!ENDIF
################################################################################
# Begin Project
# PROP Target_Last_Scanned "tpccldr - Win32 Debug"
RSC=rc.exe
CPP=cl.exe

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir "bin"
# PROP Intermediate_Dir "objects"
# PROP Target_Dir ""
OUTDIR=.\bin
INTDIR=.\objects

ALL : "$(OUTDIR)\tpccldr.exe"

CLEAN :
            -@erase "$(INTDIR)\getargs.obj"
            -@erase "$(INTDIR)\random.obj"
            -@erase "$(INTDIR)\strings.obj"
            -@erase "$(INTDIR)\time.obj"
            -@erase "$(INTDIR)\tpccldr.obj"
            -@erase "$(OUTDIR)\tpccldr.exe"

"$(OUTDIR)" :
    if not exist "$(OUTDIR)/$(NULL)" mkdir "$(OUTDIR)"

"$(INTDIR)" :
    if not exist "$(INTDIR)/$(NULL)" mkdir "$(INTDIR)"

# ADD BASE CPP /nologo /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_CONSOLE" /YX /c
# ADD CPP /nologo /MT /W3 /GX /O2 /I "c:\mssql\dblib\include" /D "NDEBUG" /D
"WIN32" /D "_CONSOLE" /D "DBNTWIN32" /c
# SUBTRACT CPP /YX
CPP_PROJ=/nologo /MT /W3 /GX /O2 /I "c:\mssql\dblib\include" /D "NDEBUG" /D\
 "WIN32" /D "_CONSOLE" /D "DBNTWIN32" /Fo"$(INTDIR)/" /c
CPP_OBJS=.\objects/
CPP_SBRS=.\.
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
BSC32_FLAGS=/nologo /o"$(OUTDIR)/tpccldr.bsc"
BSC32_SBRS= \

LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
/nologo /subsystem:console /machine:I386
# ADD LINK32 c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib
uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none
/machine:I386
LINK32_FLAGS=c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib gdi32.lib\
 winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib\
 uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none\
 /machine:I386 /out:"$(OUTDIR)/tpccldr.exe"
LINK32_OBJS= \
             "$(INTDIR)\getargs.obj" \
             "$(INTDIR)\random.obj" \
             "$(INTDIR)\strings.obj" \
             "$(INTDIR)\time.obj" \
             "$(INTDIR)\tpccldr.obj"

"$(OUTDIR)\tpccldr.exe" : "$(OUTDIR)" $(DEF_FILE) $(LINK32_OBJS)
    $(LINK32) @<<
  $(LINK32_FLAGS) $(LINK32_OBJS)
<<

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "Debug"
# PROP BASE Intermediate_Dir "Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir "bin"
# PROP Intermediate_Dir "objects"
# PROP Target_Dir ""
OUTDIR=.\bin
INTDIR=.\objects

ALL : "$(OUTDIR)\tpccldr.exe"

CLEAN :
            -@erase "$(INTDIR)\getargs.obj"
            -@erase "$(INTDIR)\random.obj"
            -@erase "$(INTDIR)\strings.obj"
            -@erase "$(INTDIR)\time.obj"
            -@erase "$(INTDIR)\tpccldr.obj"
            -@erase "$(INTDIR)\vc40.idb"
            -@erase "$(INTDIR)\vc40.pdb"
            -@erase "$(OUTDIR)\tpccldr.exe"

"$(OUTDIR)" :
    if not exist "$(OUTDIR)/$(NULL)" mkdir "$(OUTDIR)"

"$(INTDIR)" :
    if not exist "$(INTDIR)/$(NULL)" mkdir "$(INTDIR)"

# ADD BASE CPP /nologo /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D "_CONSOLE"
/YX /c
# ADD CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /I "c:\mssql\dblib\include" /D
"_DEBUG" /D "WIN32" /D "_CONSOLE" /D "DBNTWIN32" /c
# SUBTRACT CPP /YX
CPP_PROJ=/nologo /MTd /W3 /Gm /GX /Zi /Od /I "c:\mssql\dblib\include" /D\
 "_DEBUG" /D "WIN32" /D "_CONSOLE" /D "DBNTWIN32" /Fo"$(INTDIR)/"\
 /Fd"$(INTDIR)/" /c
CPP_OBJS=.\objects/
```

```
CPP_SBRS=.\.
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
BSC32_FLAGS=/nologo /o"$(OUTDIR)/tpccldr.bsc"
BSC32_SBRS= \

LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
/nologo /subsystem:console /debug /machine:I386
# ADD LINK32 c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib
uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none /debug
/machine:I386
LINK32_FLAGS=c:\mssql\dblib\lib\ntwdblib.lib kernel32.lib user32.lib gdi32.lib\
 winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib oleaut32.lib\
 uuid.lib odbc32.lib odbccp32.lib /nologo /subsystem:console /pdb:none /debug\
 /machine:I386 /out:"$(OUTDIR)/tpccldr.exe"
LINK32_OBJS= \
             "$(INTDIR)\getargs.obj" \
             "$(INTDIR)\random.obj" \
             "$(INTDIR)\strings.obj" \
             "$(INTDIR)\time.obj" \
             "$(INTDIR)\tpccldr.obj"

"$(OUTDIR)\tpccldr.exe" : "$(OUTDIR)" $(DEF_FILE) $(LINK32_OBJS)
    $(LINK32) @<<
  $(LINK32_FLAGS) $(LINK32_OBJS)
<<

!ENDIF

.c{$(CPP_OBJS)}.obj:
   $(CPP) $(CPP_PROJ) $<

.cpp{$(CPP_OBJS)}.obj:
   $(CPP) $(CPP_PROJ) $<

.cxx{$(CPP_OBJS)}.obj:
   $(CPP) $(CPP_PROJ) $<

.c{$(CPP_SBRS)}.sbr:
   $(CPP) $(CPP_PROJ) $<

.cpp{$(CPP_SBRS)}.sbr:
   $(CPP) $(CPP_PROJ) $<

.cxx{$(CPP_SBRS)}.sbr:
   $(CPP) $(CPP_PROJ) $<

################################################################################
# Begin Target

# Name "tpccldr - Win32 Release"
# Name "tpccldr - Win32 Debug"

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

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

!ENDIF

################################################################################
# Begin Source File

SOURCE=.\src\random.c
DEP_CPP_RANDO=\
             ".\src\tpcc.h"\
             "\mssql\dblib\include\sqldb.h"\
             "\mssql\dblib\include\sqlfront.h"\


"$(INTDIR)\random.obj" : $(SOURCE) $(DEP_CPP_RANDO) "$(INTDIR)"
   $(CPP) $(CPP_PROJ) $(SOURCE)


# End Source File
################################################################################
# Begin Source File

SOURCE=.\src\strings.c
DEP_CPP_STRIN=\
             ".\src\tpcc.h"\
             "\mssql\dblib\include\sqldb.h"\
             "\mssql\dblib\include\sqlfront.h"\


"$(INTDIR)\strings.obj" : $(SOURCE) $(DEP_CPP_STRIN) "$(INTDIR)"
   $(CPP) $(CPP_PROJ) $(SOURCE)


# End Source File
################################################################################
# Begin Source File

SOURCE=.\src\time.c
DEP_CPP_TIME_=\
             ".\src\tpcc.h"\
             "\mssql\dblib\include\sqldb.h"\
             "\mssql\dblib\include\sqlfront.h"\


"$(INTDIR)\time.obj" : $(SOURCE) $(DEP_CPP_TIME_) "$(INTDIR)"
   $(CPP) $(CPP_PROJ) $(SOURCE)


# End Source File
################################################################################
# Begin Source File

SOURCE=.\src\tpccldr.c
DEP_CPP_TPCCL=\
             ".\src\tpcc.h"\
             "\mssql\dblib\include\sqldb.h"\
             "\mssql\dblib\include\sqlfront.h"\


"$(INTDIR)\tpccldr.obj" : $(SOURCE) $(DEP_CPP_TPCCL) "$(INTDIR)"
   $(CPP) $(CPP_PROJ) $(SOURCE)


# End Source File
################################################################################
# Begin Source File

SOURCE=.\src\getargs.c
DEP_CPP_GETAR=\
             ".\src\tpcc.h"\
             "\mssql\dblib\include\sqldb.h"\
             "\mssql\dblib\include\sqlfront.h"\


"$(INTDIR)\getargs.obj" : $(SOURCE) $(DEP_CPP_GETAR) "$(INTDIR)"
   $(CPP) $(CPP_PROJ) $(SOURCE)


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

tpccldr.plg

```
<html>
<body>
<pre>
<h1>Build Log</h1>
<h3>
--------------------Configuration: tpccldr - Win32 Release--------------------
</h3>
<h3>Command Lines</h3>
Creating temporary file "C:\DOCUME~1\jamiere\LOCALS~1\Temp\RSP19.tmp" with
contents
[
/nologo /MT /W3 /GX /O2 /D "NDEBUG" /D "WIN32" /D "_CONSOLE" /D "DBNTWIN32"
/Fo".\objects/" /Fd".\objects/" /FD /c
"D:\MSTPCC.440\SETUP\loader\src\getargs.c"
"D:\MSTPCC.440\SETUP\loader\src\random.c"
"D:\MSTPCC.440\SETUP\loader\src\strings.c"
"D:\MSTPCC.440\SETUP\loader\src\time.c"
"D:\MSTPCC.440\SETUP\loader\src\tpccldr.c"
]
Creating command line "cl.exe @C:\DOCUME~1\jamiere\LOCALS~1\Temp\RSP19.tmp"
Creating temporary file "C:\DOCUME~1\jamiere\LOCALS~1\Temp\RSP1A.tmp" with
contents
[
kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib advapi32.lib
shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib odbcbcp.lib
/nologo /subsystem:console /pdb:none /machine:I386 /out:".\bin/tpccldr.exe"
.\objects\getargs.obj
.\objects\random.obj
.\objects\strings.obj
.\objects\time.obj
.\objects\tpccldr.obj
]
Creating command line "link.exe @C:\DOCUME~1\jamiere\LOCALS~1\Temp\RSP1A.tmp"
<h3>Output Window</h3>
Compiling...
getargs.c
random.c
strings.c
time.c
tpccldr.c
Generating Code...
Linking...



<h3>Results</h3>
tpccldr.exe - 0 error(s), 0 warning(s)
</pre>
</body>
</html>
```

getargs.c

```
//           File:                       GETARGS.C
//                                                       Microsoft TPC-C Kit Ver.
4.41
//                                                       Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//           Purpose:     Source file for command line processing


// Includes
#include "tpcc.h"

//==============================================================================
//
// Function name: GetArgsLoader
//
//==============================================================================

void GetArgsLoader(int argc, char **argv, TPCCLDR_ARGS *pargs)
{
    int                 i;
    char     *ptr;

#ifdef DEBUG
    printf("[%ld]DBG: Entering GetArgsLoader()\n", (int) GetCurrentThreadId());
#endif

    /* init args struct with some useful values */
    pargs->server                                   =  SERVER;
    pargs->user                                     =  USER;
    pargs->password                                 =  PASSWORD;
    pargs->database                                 =  DATABASE;
    pargs->batch                                    =  BATCH;
    pargs->num_warehouses                           =  UNDEF;
            pargs->tables_all                                       =  TRUE;
            pargs->table_item                                       =  FALSE;
            pargs->table_warehouse                  =  FALSE;
            pargs->table_customer                   =  FALSE;
            pargs->table_orders                                     =  FALSE;
            pargs->loader_res_file                  =  LOADER_RES_FILE;
            pargs->log_path
            =  LOG_PATH;
            pargs->pack_size                        =  DEFLDPACKSIZE;
            pargs->starting_warehouse  =  DEF_STARTING_WAREHOUSE;
            pargs->build_index                                      =
BUILD_INDEX;
            pargs->index_order                                      =
INDEX_ORDER;
```

```
            pargs->index_script_path   =  INDEX_SCRIPT_PATH;
            pargs->scale_down                                   =
SCALE_DOWN;

    /* check for zero command line args */
    if ( argc == 1 )
                        GetArgsLoaderUsage();

    for (i = 1; i < argc; ++i)
    {
                        if (argv[i][0] != '-' && argv[i][0] != '/')
                        {
                        printf("\nUnrecognized command");
                        GetArgsLoaderUsage();
                        exit(1);
                        }

                        ptr = argv[i];

                        switch (ptr[1])
                        {
                        case '?':     /* Fall throught */
                                            GetArgsLoaderUsage();
                                            break;


                        case 'D':
                                            pargs->database = ptr+2;
                                            break;

                        case 'P':
                                            pargs->password = ptr+2;
                                            break;


                        case 'S':
                                            pargs->server = ptr+2;
                                            break;

                        case 'U':
                                            pargs->user = ptr+2;
                                            break;


                        case 'b':
                                            pargs->batch =
atol(ptr+2);
                                            break;


                        case 'W':
                                            pargs->num_warehouses =
atol(ptr+2);
                                            break;

                        case 's':
                                            pargs->starting_warehouse
= atol(ptr+2);
                                            break;


                        case 't':
                                            {
                                                        pargs-
>tables_all = FALSE;
                                                        if
(strcmp(ptr+2,"item") == 0)

            pargs->table_item = TRUE;
                                                        else if
(strcmp(ptr+2,"warehouse") == 0)

            pargs->table_warehouse = TRUE;
                                                        else if
(strcmp(ptr+2,"customer") == 0)

            pargs->table_customer = TRUE;
                                                        else if
(strcmp(ptr+2,"orders") == 0)

            pargs->table_orders = TRUE;
                                                        else
                                                        {


            printf("\nUnrecognized command");

            GetArgsLoaderUsage();
                                                        exit(1);
                                                        }
                                                                    break;
                                            }

                                    case 'f':
                                                        pargs->loader_res_file =
ptr+2;
                                                        break;

                                    case 'L':
                                                        pargs->log_path = ptr+2;
                                                        break;

                                    case 'p':
                                                        pargs->pack_size =
atol(ptr+2);
                                                        break;

                                    case 'i':
                                                        pargs->build_index =
atol(ptr+2);
                                                        break;

                                    case 'o':
                                                        pargs->index_order =
atol(ptr+2);
                                                        break;

                                    case 'c':
                                                        pargs->scale_down =
atol(ptr+2);
                                                        break;

                        case 'd':
                                                        pargs->index_script_path =
ptr+2;
                                                        break;

                                    default:
                                    GetArgsLoaderUsage();
                                    exit(-1);
                                    break;
                        }
    }

    /* check for required args */
    if (pargs->num_warehouses == UNDEF )
    {
                        printf("Number of Warehouses is required\n");
                        exit(-2);
    }

    return;
}


//==============================================================
//
// Function name: GetArgsLoaderUsage
//
//==============================================================

void GetArgsLoaderUsage()
{

#ifdef DEBUG
    printf("[%ld]DBG: Entering GetArgsLoaderUsage()\n", (int)
GetCurrentThreadId());
#endif


    printf("TPCCLDR:\n\n");
            printf("Parameter
Default\n");
            printf("-------------------------------------------------------
----\n");
    printf("-W Number of Warehouses to Load                     Required \n");
    printf("-S Server                                           %s\n",
SERVER);
    printf("-U Username                                         %s\n", USER);
    printf("-P Password                                         %s\n",
PASSWORD);
    printf("-D Database                                         %s\n",
DATABASE);
            printf("-b Batch
Size                                    %ld\n", (long) BATCH);
            printf("-p TDS packet
size                                %ld\n", (long) DEFLDPACKSIZE);
            printf("-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);
}
```

random.c

```
//          File:                       RANDOM.C
//                                                      Microsoft TPC-C Kit Ver.
4.41
//                                                      Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//          Purpose:     Random number generation routines for database loader


// Includes
#include "tpcc.h"
#include "math.h"

// Defines
#define A             16807
#define M       2147483647
#define Q           127773      /* M div A */
#define R             2836      /* M mod A */
#define Thread              __declspec(thread)

// Globals
long        Thread Seed = 0;       /* thread local seed */

/*****************************************************************************
*                                                                            *
* random -                                                                   *
*       Implements a GOOD pseudo random number generator.  This generator    *
*       will/should? run the complete period before 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;
}
```

strings.c

```
//           File:                       STRINGS.C
//                                                       Microsoft TPC-C Kit Ver.
4.41
//                                                       Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//           Purpose:     Source file for database loader string functions


// Includes
#include "tpcc.h"
#include <string.h>
#include <ctype.h>

//==================================================================
//
// Function name: MakeAddress
//
//==================================================================

void MakeAddress(char *street_1,
                                                        char *street_2,
                                                        char *city,
                                                        char *state,
                                                        char *zip)
{

#ifdef DEBUG
    printf("[%ld]DBG: Entering MakeAddress()\n", (int) GetCurrentThreadId());
#endif

    MakeAlphaString (10, 20, ADDRESS_LEN, street_1);
    MakeAlphaString (10, 20, ADDRESS_LEN, street_2);
    MakeAlphaString (10, 20, ADDRESS_LEN, city);
    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 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)
{
             int                        len;

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

             return;
}
```

time.c

```
//          File:                       TIME.C
//                                                      Microsoft TPC-C Kit Ver.
4.41
//                                                      Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//          Purpose:     Source file for time functions


// Includes
```

```
#include "tpcc.h"

// Globals
static long start_sec;


//==================================================================
//
// Function name: TimeNow
//
//==================================================================

long TimeNow()
{
   long                 time_now;
   struct    _timeb el_time;

#ifdef DEBUG
    printf("[%ld]DBG: Entering TimeNow()\n", (int) GetCurrentThreadId());
#endif

   _ftime(&el_time);

   time_now = ((el_time.time - start_sec) * 1000) + el_time.millitm;

   return time_now;
}
```

tpcc.h

```
//           File:                    TPCC.H
//                                                Microsoft TPC-C Kit Ver.
4.41
//                                                Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//           Purpose:     Header file for TPC-C database loader


// Build number of TPC Benchmark Kit
#define TPCKIT_VER        "4.41"

// General headers
#include <windows.h>
#include <winbase.h>
#include <stdlib.h>
#include <stdio.h>
#include <process.h>
#include <stddef.h>
#include <stdarg.h>
#include <string.h>
#include <time.h>
#include <sys\timeb.h>
#include <sys\types.h>

// ODBC headers
#include <sql.h>
#include <sqlext.h>
#include <odbcss.h>

// General constants
#define MILLI                           1000
#define FALSE                                   0
#define TRUE                                    1
#define UNDEF                                                   -1
#define MINPRINTASCII                              32
#define MAXPRINTASCII                             126

// Default environment constants
#define SERVER                                  ""
#define DATABASE                                "tpcc"
#define USER                                    "sa"
#define PASSWORD                          ""

// Default loader arguments
#define BATCH                           10000
#define DEFLDPACKSIZE                           32768
#define LOADER_RES_FILE
"C:\\MSTPCC.440\\SETUP\\logs\\load.out"
#define LOG_PATH                              "C:\\MSTPCC.440\\SETUP\\LOGS\\";
#define LOADER_NURAND_C                            123
#define DEF_STARTING_WAREHOUSE                    1
#define BUILD_INDEX
            1           // build both data and indexes
#define INDEX_ORDER
            1           // build indexes before load
#define SCALE_DOWN
            0   // build a normal scale database
#define INDEX_SCRIPT_PATH  "scripts"

typedef struct
{
    char                                        *server;
    char                                        *database;
    char                                        *user;
    char                                        *password;
            BOOL                                                tables_all;
                        // set if loading all tables
            BOOL                                                table_item;
                        // set if loading ITEM table specifically
            BOOL
            table_warehouse;          // set if loading WAREHOUSE, DISTRICT,
and STOCK
            BOOL
            table_customer;                         // set if loading CUSTOMER
and HISTORY
            BOOL                                                table_orders;
            // set if loading NEW-ORDER, ORDERS, ORDER-LINE
    long                                        num_warehouses;
    long                                        batch;
    long                                        verbose;
            long                                                pack_size;
            char
            *loader_res_file;
            char                                                *log_path;
            char
            *synch_servername;
            long
            case_sensitivity;
            long
            starting_warehouse;
            long                                                build_index;
            long                                                index_order;
            long                                                scale_down;
            char
            *index_script_path;
} TPCCLDR_ARGS;

// String length constants
            #define SERVER_NAME_LEN            20
            #define DATABASE_NAME_LEN          20
            #define USER_NAME_LEN              20
            #define PASSWORD_LEN               20
            #define TABLE_NAME_LEN             20
            #define I_DATA_LEN                 50
            #define I_NAME_LEN                 24
            #define BRAND_LEN                   1
            #define LAST_NAME_LEN              16
            #define W_NAME_LEN                 10
            #define ADDRESS_LEN                20
            #define STATE_LEN                   2
            #define ZIP_LEN                     9
            #define S_DIST_LEN                 24
            #define S_DATA_LEN                 50
            #define D_NAME_LEN                 10
            #define FIRST_NAME_LEN             16
            #define MIDDLE_NAME_LEN             2
            #define PHONE_LEN                  16
            #define CREDIT_LEN                  2
            #define C_DATA_LEN                500
            #define H_DATA_LEN                 24
            #define DIST_INFO_LEN              24
            #define MAX_OL_NEW_ORDER_ITEMS     15
            #define MAX_OL_ORDER_STATUS_ITEMS  15
            #define STATUS_LEN                 25
            #define OL_DIST_INFO_LEN                    24
            #define C_SINCE_LEN
23
            #define H_DATE_LEN
23
            #define OL_DELIVERY_D_LEN                   23
            #define O_ENTRY_D_LEN              23
// Functions in random.c
void          seed();
long          irand();
double        drand();
void          WUCreate();
short         WURand();
long          RandomNumber(long lower, long upper);

// Functions in getargs.c;
void          GetArgsLoader();
void          GetArgsLoaderUsage();

// Functions in time.c
long          TimeNow();

// Functions in strings.c
void          MakeAddress();
void          LastName();
int           MakeAlphaString();
int           MakeOriginalAlphaString();
int           MakeNumberString();
int           MakeZipNumberString();
void          InitString();
void          InitAddress();
void          PaddString();
```

tpccldr.c

```
//           File:                    TPCCLDR.C
//                                                Microsoft TPC-C Kit Ver.
4.41
//                                                Copyright Microsoft, 1996,
1997, 1998, 1999, 2000, 2001
//           Purpose:     Source file for TPC-C database loader


// Includes
#include "tpcc.h"
#include "search.h"

// Defines
#define MAXITEMS                100000
#define MAXITEMS_SCALE_DOWN                             100
#define CUSTOMERS_PER_DISTRICT  3000
#define CUSTOMERS_SCALE_DOWN            30
#define 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 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
{
    long                time_start;
} LOADER_TIME_STRUCT;


// Global variables

char        szLastError[300];

HENV        henv;

HDBC        v_hdbc;
            // for SQL Server version verification
HDBC        i_hdbc1;
            // for ITEM table
HDBC        w_hdbc1;
            // for WAREHOUSE, DISTRICT, STOCK
HDBC        c_hdbc1;
            // for CUSTOMER
HDBC        c_hdbc2;
            // for HISTORY
HDBC        o_hdbc1;
            // for ORDERS
HDBC        o_hdbc2;
            // for NEW-ORDER
HDBC        o_hdbc3;
            // for ORDER-LINE

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

ORDERS_STRUCT   orders_buf[ORDERS_PER_DISTRICT];
CUSTOMER_STRUCT customer_buf[CUSTOMERS_PER_DISTRICT];
long            orders_rows_loaded;
long            new_order_rows_loaded;
long            order_line_rows_loaded;
long            history_rows_loaded;
long            customer_rows_loaded;
long            stock_rows_loaded;
long            district_rows_loaded;
long            item_rows_loaded;
long            warehouse_rows_loaded;
long            main_time_start;
long            main_time_end;
long                                max_items;
long                                customers_per_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 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];
        long                time_start;
        RETCODE             rc;
        DBINT               rcint;
        char                bcphint[128];
        char                err_log_path[256];

        // Seed with unique number
        seed(1);

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

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

        InitString(i_name, I_NAME_LEN+1);
        InitString(i_data, I_DATA_LEN+1);

        sprintf(name, "%s..%s", aptr->database, "item");

        //rc = bcp_init(i_hdbc1, name, NULL, "logs\\item.err", DB_IN);
        strcpy(err_log_path,aptr->log_path);
        strcat(err_log_path,"item.err");
        rc = bcp_init(i_hdbc1, name, NULL, err_log_path , DB_IN);
        if (rc != SUCCEED)
                HandleErrorDBC(i_hdbc1);

        if ((aptr->build_index == 1) && (aptr->index_order == 1))
        {
                sprintf(bcphint, "tablock, order (i_id),
ROWS_PER_BATCH = 100000");
                rc = bcp_control(i_hdbc1, BCPHINTS, (void*) bcphint);
                if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);
        }

       rc = bcp_bind(i_hdbc1, (BYTE *) &i_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
        if (rc != SUCCEED)
                HandleErrorDBC(i_hdbc1);

       rc = bcp_bind(i_hdbc1, (BYTE *) &i_im_id, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT4, 2);
        if (rc != SUCCEED)
                HandleErrorDBC(i_hdbc1);

        rc = bcp_bind(i_hdbc1, (BYTE *) i_name, 0, I_NAME_LEN, NULL, 0, 0,
3);
        if (rc != SUCCEED)
                HandleErrorDBC(i_hdbc1);

       rc = bcp_bind(i_hdbc1, (BYTE *) &i_price, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 4);
        if (rc != SUCCEED)
                HandleErrorDBC(i_hdbc1);

        rc = bcp_bind(i_hdbc1, (BYTE *) i_data, 0, I_DATA_LEN, NULL, 0, 0,
5);
        if (rc != SUCCEED)
                HandleErrorDBC(i_hdbc1);

        time_start = (TimeNow() / MILLI);

        item_rows_loaded = 0;

        for (i_id = 1; i_id <= max_items; i_id++)
        {
                i_im_id = RandomNumber(1L, 10000L);

                MakeAlphaString(14, 24, I_NAME_LEN, i_name);

                i_price = ((float) RandomNumber(100L, 10000L))/100.0;

                MakeOriginalAlphaString(26, 50, I_DATA_LEN, i_data,
10);

                rc = bcp_sendrow(i_hdbc1);
                if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

                item_rows_loaded++;
                CheckForCommit(i_hdbc1, i_hstmt1, item_rows_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];
        long         time_start;
        RETCODE      rc;
        DBINT        rcint;
        char         bcphint[128];
        char         err_log_path[256];

        // Seed with unique number
```

```
		seed(2);

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

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

		InitString(w_name, W_NAME_LEN+1);
		InitAddress(w_street_1, w_street_2, w_city, w_state, w_zip);

		sprintf(name, "%s..%s", aptr->database, "warehouse");

		//rc = bcp_init(w_hdbc1, name, NULL, "logs\\whouse.err", DB_IN);
		strcpy(err_log_path,aptr->log_path);
		strcat(err_log_path,"whouse.err");
		rc = bcp_init(w_hdbc1, name, NULL, err_log_path, DB_IN);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);

		if ((aptr->build_index == 1) && (aptr->index_order == 1))
		{
			sprintf(bcphint, "tablock, order (w_id),
ROWS_PER_BATCH = %d", aptr->num_warehouses);
			rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
			if (rc != SUCCEED)
				HandleErrorDBC(w_hdbc1);
		}

	       rc = bcp_bind(w_hdbc1, (BYTE *) &w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 1);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);

		rc = bcp_bind(w_hdbc1, (BYTE *) w_name, 0, W_NAME_LEN, NULL, 0, 0,
2);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);

		rc = bcp_bind(w_hdbc1, (BYTE *) w_street_1, 0, ADDRESS_LEN, NULL,
0, 0, 3);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);

		rc = bcp_bind(w_hdbc1, (BYTE *) w_street_2, 0, ADDRESS_LEN, NULL,
0, 0, 4);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);

	       rc = bcp_bind(w_hdbc1, (BYTE *) w_city, 0, ADDRESS_LEN, NULL, 0, 0,
5);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);

		rc = bcp_bind(w_hdbc1, (BYTE *) w_state, 0, STATE_LEN, NULL, 0, 0,
6);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);

		rc = bcp_bind(w_hdbc1, (BYTE *) w_zip, 0, ZIP_LEN, NULL, 0, 0, 7);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);

		rc = bcp_bind(w_hdbc1, (BYTE *) &w_tax, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 8);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);

		rc = bcp_bind(w_hdbc1, (BYTE *) &w_ytd, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 9);
		if (rc != SUCCEED)
			HandleErrorDBC(w_hdbc1);

		time_start = (TimeNow() / MILLI);

		warehouse_rows_loaded = 0;

		for (w_id = (short)aptr->starting_warehouse; w_id <= aptr-
>num_warehouses; w_id++)
		{
			MakeAlphaString(6,10, W_NAME_LEN, w_name);

			MakeAddress(w_street_1, w_street_2, w_city, w_state,
w_zip);

			w_tax = ((float) RandomNumber(0L,2000L))/10000.00;

			w_ytd = 300000.00;

			rc = bcp_sendrow(w_hdbc1);
			if (rc != SUCCEED)
				HandleErrorDBC(w_hdbc1);

			warehouse_rows_loaded++;
			CheckForCommit(w_hdbc1, i_hstmt1,
warehouse_rows_loaded, "warehouse", &time_start);
		}

		rcint = bcp_done(w_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;
             long         time_start;
             int                       w_id;
             RETCODE      rc;
             DBINT        rcint;
             char         bcphint[128];
             char         err_log_path[256];

             // Seed with unique number
             seed(4);

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

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

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

             //rc = bcp_init(w_hdbc1, name, NULL, "logs\\district.err", DB_IN);
             strcpy(err_log_path,aptr->log_path);
             strcat(err_log_path,"district.err");
             rc = bcp_init(w_hdbc1, name, NULL, err_log_path, DB_IN);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

             if ((aptr->build_index == 1) && (aptr->index_order == 1))
             {
                          sprintf(bcphint, "tablock, order (d_w_id, d_id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 10));
                          rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
                          if (rc != SUCCEED)
                                       HandleErrorDBC(w_hdbc1);
             }

            rc = bcp_bind(w_hdbc1, (BYTE *) &d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 1);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) &d_w_id, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT2, 2);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) d_name, 0, D_NAME_LEN, NULL, 0, 0,
3);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) d_street_1, 0, ADDRESS_LEN, NULL,
0, 0, 4);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) d_street_2, 0, ADDRESS_LEN, NULL,
0, 0, 5);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

            rc = bcp_bind(w_hdbc1, (BYTE *) d_city, 0, ADDRESS_LEN, NULL, 0, 0,
6);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) d_state, 0, STATE_LEN, NULL, 0, 0,
7);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) d_zip, 0, ZIP_LEN, NULL, 0, 0, 8);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) &d_tax, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 9);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (BYTE *) &d_ytd, 0, SQL_VARLEN_DATA, NULL,
0, SQLFLT8, 10);
             if (rc != SUCCEED)
                          HandleErrorDBC(w_hdbc1);

             rc = bcp_bind(w_hdbc1, (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];
    short    len;
            char          name[20];
            long          time_start;
            RETCODE       rc;
            DBINT         rcint;
            char          bcphint[128];
            char          err_log_path[256];

            // Seed with unique number
            seed(3);

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

            sprintf(name, "%s..%s", aptr->database, "stock");

            //rc = bcp_init(w_hdbc1, name, NULL, "logs\\stock.err", DB_IN);
            strcpy(err_log_path,aptr->log_path);
            strcat(err_log_path,"stock.err");
            rc = bcp_init(w_hdbc1, name, NULL, err_log_path, DB_IN);
            if (rc != SUCCEED)
                        HandleErrorDBC(w_hdbc1);

            if ((aptr->build_index == 1) && (aptr->index_order == 1))
            {
                        sprintf(bcphint, "tablock, order (s_i_id, s_w_id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 100000));
                        rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
                        if (rc != 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];
	int
	num_procs;
	char
	err_log_path_cust[256];
	char
	err_log_path_hist[256];
	// SQLRETURN                                    rc_1;
	// SQLSMALLINT
	recnum, MsgLen;
	// SQLCHAR
	Sqlstate[6], Msg[SQL_MAX_MESSAGE_LENGTH];
	// SQLINTEGER                                   NativeError;

	// Seed with unique number
	seed(5);

	printf("Loading customer and history tables...\n");

	// if build index before load...
	if ((aptr->build_index == 1) && (aptr->index_order == 1))
	{
		BuildIndex("idxcuscl");
		// check the number of processors on this system
		// if 8 or more processors, then build index on
History.
		// if less than 8 processors, do not build the index
		num_procs = atoi(getenv( "NUMBER_OF_PROCESSORS" ));
		if ( num_procs >= 8 )
			BuildIndex("idxhiscl");
	}

	// Initialize bulk copy
	sprintf(name, "%s..%s", aptr->database, "customer");

	//rc = bcp_init(c_hdbc1, name, NULL, "logs\\customer.err", DB_IN);
	strcpy(err_log_path_cust,aptr->log_path);
	strcat(err_log_path_cust,"customer.err");
	rc = bcp_init(c_hdbc1, name, NULL, err_log_path_cust, DB_IN);
	if (rc != SUCCEED)
		HandleErrorDBC(c_hdbc1);

	if ((aptr->build_index == 1) && (aptr->index_order == 1))
	{
		sprintf(bcphint, "tablock, order (c_w_id, c_d_id,
c_id), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 30000));
		rc = bcp_control(c_hdbc1, BCPHINTS, (void*) bcphint);
		if (rc != SUCCEED)
			HandleErrorDBC(c_hdbc1);
	}

	sprintf(name, "%s..%s", aptr->database, "history");

	rc = bcp_init(c_hdbc2, name, NULL, "logs\\history.err", DB_IN);
	strcpy(err_log_path_hist,aptr->log_path);
	strcat(err_log_path_hist,"history.err");
	rc = bcp_init(c_hdbc2, name, NULL, err_log_path_hist, DB_IN);
	if (rc != SUCCEED)
		HandleErrorDBC(c_hdbc2);

	sprintf(bcphint, "tablock");
	rc = bcp_control(c_hdbc2, BCPHINTS, (void*) bcphint);
	if (rc != SUCCEED)
		HandleErrorDBC(c_hdbc2);

	customer_rows_loaded    = 0;
	history_rows_loaded     = 0;

	CustomerBufInit();

	customer_time_start.time_start = (TimeNow() / MILLI);
	history_time_start.time_start = (TimeNow() / MILLI);

	for (w_id = (short)aptr->starting_warehouse; w_id <= aptr-
>num_warehouses; w_id++)
	{
		for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE;
d_id++)
		{
			CustomerBufLoad(d_id, w_id);

		// Start parallel loading threads here...

			// Start customer table thread

			printf("...Loading customer table for:
d_id = %d, w_id = %d\n", d_id, w_id);

			hThread[0] = CreateThread(NULL,

			  0,

			  (LPTHREAD_START_ROUTINE)
LoadCustomerTable,

			  &customer_time_start,

			  0,

			  &dwThreadID[0]);

			if (hThread[0] == NULL)
			{
				printf("Error, failed in
creating creating thread = 0.\n");
				exit(-1);
			}

			// Start History table thread

			printf("...Loading history table for:
d_id = %d, w_id = %d\n", d_id, w_id);

			hThread[1] = CreateThread(NULL,

			  0,

			  (LPTHREAD_START_ROUTINE)
LoadHistoryTable,

			  &history_time_start,

			  0,

			  &dwThreadID[1]);

			if (hThread[1] == NULL)
			{
				printf("Error, failed in
creating creating thread = 1.\n");
				exit(-1);
			}

			WaitForSingleObject( hThread[0],
INFINITE );
			WaitForSingleObject( hThread[1],
INFINITE );

			if (CloseHandle(hThread[0]) == FALSE)
			{
				printf("Error, failed in
closing customer thread handle with errno: %d\n", GetLastError());
			}

			if (CloseHandle(hThread[1]) == FALSE)
			{
				printf("Error, failed in
closing history thread handle with errno: %d\n", GetLastError());
			}


		}

	}

	// flush the bulk connection
	rcint = bcp_done(c_hdbc1);
	if (rcint < 0)
		HandleErrorDBC(c_hdbc1);

	rcint = bcp_done(c_hdbc2);
	if (rcint < 0)
		HandleErrorDBC(c_hdbc2);

	printf("Finished loading customer table.\n");

	// if build index after load...
	if ((aptr->build_index == 1) && (aptr->index_order == 0))
	{
		BuildIndex("idxcuscl");
		// check the number of processors on this system
		// if 8 or more processors, then build index on
History.
		// if less than 8 processors, do not build the index
		num_procs = atoi(getenv( "NUMBER_OF_PROCESSORS" ));
		if (num_procs >= 8)
			BuildIndex("idxhiscl");
	}

	// build non-clustered index
	if (aptr->build_index == 1)
		BuildIndex("idxcusnc");

	// Output the NURAND used for the loader into C_FIRST for C_ID = 1,
	 // C_W_ID = 1, and C_D_ID = 1
	 //sprintf(cmd, "osql -S%s -U%s -P%s -d%s -e -Q\"update customer
set c_first = 'C_LOAD = %d' where c_id = 1 and c_w_id = 1 and c_d_id = 1\" >
logs\\nurand_load.log",
	sprintf(cmd, "osql -S%s -U%s -P%s -d%s -e -Q\"update customer set
c_first = 'C_LOAD = %d' where c_id = 1 and c_w_id = 1 and c_d_id = 1\"
> %snurand_load.log",
						aptr->server,
						aptr->user,
						aptr->password,
						aptr->database,
						LOADER_NURAND_C,
						aptr->log_path);

	system(cmd);

	SQLFreeStmt(c_hstmt1, SQL_DROP);
	SQLDisconnect(c_hdbc1);
	SQLFreeConnect(c_hdbc1);

	SQLFreeStmt(c_hstmt2, SQL_DROP);
	SQLDisconnect(c_hdbc2);
	SQLFreeConnect(c_hdbc2);


    return;

}


//==============================================================
//
// Function   : CustomerBufInit
//
//==============================================================

void CustomerBufInit()
{
	int     i;

	for (i=0;i<customers_per_district;i++)
	{
		customer_buf[i].c_id = 0;
		customer_buf[i].c_d_id = 0;
		customer_buf[i].c_w_id = 0;

		strcpy(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];
            char
            err_log_path_ord[256];
            char
            err_log_path_nord[256];
            char
            err_log_path_ordl[256];

            // seed with unique number
            seed(6);

            printf("Loading orders...\n");

            // if build index before load...
            if ((aptr->build_index == 1) && (aptr->index_order == 1))
            {
                                BuildIndex("idxordcl");
                                BuildIndex("idxnodcl");
                                BuildIndex("idxodlcl");
            }

            // initialize bulk copy
            sprintf(name, "%s..%s", aptr->database, "orders");

            rc = bcp_init(o_hdbc1, name, NULL, "logs\\orders.err", DB_IN);
            strcpy(err_log_path_ord,aptr->log_path);
            strcat(err_log_path_ord,"orders.err");
            rc = bcp_init(o_hdbc1, name, NULL, err_log_path_ord, DB_IN);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc1);

            if ((aptr->build_index == 1) && (aptr->index_order == 1))
            {
                        sprintf(bcphint, "tablock, order (o_w_id, o_d_id,
o_id), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 30000));
                        rc = bcp_control(o_hdbc1, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(o_hdbc1);
            }

            sprintf(name, "%s..%s", aptr->database, "new_order");

            rc = bcp_init(o_hdbc2, name, NULL, "logs\\neword.err", DB_IN);
            strcpy(err_log_path_nord,aptr->log_path);
            strcat(err_log_path_nord,"neword.err");
            rc = bcp_init(o_hdbc2, name, NULL, err_log_path_nord, DB_IN);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc2);

            if ((aptr->build_index == 1) && (aptr->index_order == 1))
            {
                        sprintf(bcphint, "tablock, order (no_w_id, no_d_id,
no_o_id), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 9000));
                        rc = bcp_control(o_hdbc2, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(o_hdbc2);
            }

            sprintf(name, "%s..%s", aptr->database, "order_line");

            rc = bcp_init(o_hdbc3, name, NULL, "logs\\ordline.err", DB_IN);
            strcpy(err_log_path_ordl,aptr->log_path);
            strcat(err_log_path_ordl,"ordline.err");
            rc = bcp_init(o_hdbc3, name, NULL, err_log_path_ordl, DB_IN);
            if (rc != SUCCEED)
                        HandleErrorDBC(o_hdbc3);

    if ((aptr->build_index == 1) && (aptr->index_order == 1))
            {
                        sprintf(bcphint, "tablock, order (ol_w_id, ol_d_id,
ol_o_id, ol_number), ROWS_PER_BATCH = %u", (aptr->num_warehouses * 300000));
                        rc = bcp_control(o_hdbc3, BCPHINTS, (void*) bcphint);
                        if (rc != SUCCEED)
                                    HandleErrorDBC(o_hdbc3);
            }

            orders_rows_loaded      = 0;
            new_order_rows_loaded   = 0;
            order_line_rows_loaded  = 0;

            OrdersBufInit();

            orders_time_start.time_start = (TimeNow() / MILLI);
            new_order_time_start.time_start = (TimeNow() / MILLI);
            order_line_time_start.time_start = (TimeNow() / MILLI);

            for (w_id = (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,
                                    long *time_start)
{

    long     time_end, time_diff;
             // DBINT     rcint;

    if ( !(rows_loaded % aptr->batch) )
    {
                        // rcint = bcp_batch(hdbc);
                        // if (rcint < 0)
                        //          HandleErrorDBC(hdbc);

                        time_end = (TimeNow() / MILLI);
                        time_diff = time_end - *time_start;

                        printf("-> Loaded %ld rows into %s in %ld sec - Total
= %d (%.2f rps)\n",
                                    aptr->batch,
                                    table_name,
                                                time_diff,
                                    rows_loaded,
                                                (float) aptr->batch /
(time_diff ? time_diff : 1L));

                        *time_start = time_end;
    }

    return;
}


//================================================================
//
// Function   : OpenConnections
//
//================================================================

void OpenConnections()
{

            RETCODE         rc;

            char                                szDriverString[300];
            char                                szDriverStringOut[1024];
            SQLSMALLINT               cbDriverStringOut;


            SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv );

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

            SQLAllocHandle(SQL_HANDLE_DBC, henv , &i_hdbc1);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &w_hdbc1);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &c_hdbc1);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &c_hdbc2);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &o_hdbc1);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &o_hdbc2);
            SQLAllocHandle(SQL_HANDLE_DBC, henv , &o_hdbc3);

            SQLSetConnectAttr(i_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
            SQLSetConnectAttr(w_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
            SQLSetConnectAttr(c_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
            SQLSetConnectAttr(c_hdbc2, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
            SQLSetConnectAttr(o_hdbc1, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
            SQLSetConnectAttr(o_hdbc2, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );
            SQLSetConnectAttr(o_hdbc3, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );

            // Open connections to SQL Server

            // Connection 1

            sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,

aptr->server,

aptr->user,

aptr->password,

aptr->database );

            rc = SQLSetConnectOption (i_hdbc1, SQL_PACKET_SIZE, aptr-
>pack_size);
            if (rc != SUCCEED)
                        HandleErrorDBC(i_hdbc1);

            rc = SQLDriverConnect ( i_hdbc1,
                                                                        NULL,

            (SQLCHAR*)&szDriverString[0] ,

            SQL_NTS,

            (SQLCHAR*)&szDriverStringOut[0],

            sizeof(szDriverStringOut),

            &cbDriverStringOut,

            SQL_DRIVER_NOPROMPT );
            if (rc != SUCCEED)
                        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 > %s%s.log",
                                                aptr->server,
                                                aptr->user,
                                                aptr->password,
                                                aptr->index_script_path,
                                                index_script,
                                                aptr->log_path,
                                                index_script);

            system(cmd);

            printf("Finished index creation:  %s\n",index_script);
}


void HandleErrorDBC (SQLHDBC  hdbc1)
{

            SQLCHAR                     SqlState[6],
Msg[SQL_MAX_MESSAGE_LENGTH];
            SQLINTEGER  NativeError;
            SQLSMALLINT i, MsgLen;
            SQLRETURN   rc2;
            char                        timebuf[128];
            char                        datebuf[128];
            char                        err_log_path[256];
            FILE                        *fp1;

            i = 1;
            while (( rc2 = SQLGetDiagRec(SQL_HANDLE_DBC , hdbc1, i, SqlState ,
&NativeError,
                                                Msg, sizeof(Msg) ,
&MsgLen )) != SQL_NO_DATA )
            {

                        sprintf( szLastError , "%s" ,  Msg );

                        _strtime(timebuf);
                        _strdate(datebuf);

                        printf( "[%s : %s] %s\n" , datebuf, timebuf,
szLastError);

                        strcpy(err_log_path,aptr->log_path);
                        strcat(err_log_path,"tpccldr.err");
                        fp1 = fopen(err_log_path,"w");
                        //fp1 = fopen("logs\\tpccldr.err","w");
                        if (fp1 == NULL)
                                    printf("ERROR:  Unable to open errorlog
file.\n");
                        else
                        {
                                    fprintf(fp1, "[%s : %s] %s\n" , datebuf,
timebuf, szLastError);
                                    fclose(fp1);
                        }

                        i++;

            }
}

void HandleErrorSTMT (HSTMT  hstmt1)
{

            SQLCHAR                     SqlState[6],
Msg[SQL_MAX_MESSAGE_LENGTH];
            SQLINTEGER  NativeError;
            SQLSMALLINT i, MsgLen;
            SQLRETURN   rc2;
            char                        timebuf[128];
            char                        datebuf[128];
            char                        err_log_path[256];
            FILE                        *fp1;

            i = 1;
            while (( rc2 = SQLGetDiagRec(SQL_HANDLE_STMT , hstmt1, i,
SqlState , &NativeError,
                                                Msg, sizeof(Msg) ,
&MsgLen )) != SQL_NO_DATA )
            {

                        sprintf( szLastError , "%s" ,  Msg );
```

```
                        _strtime(timebuf);
                        _strdate(datebuf);

                        printf( "[%s : %s] %s\n" , datebuf, timebuf,
szLastError);

                        strcpy(err_log_path,aptr->log_path);
                        strcat(err_log_path,"tpccldr.err");
                        fp1 = fopen(err_log_path,"w");
                        //fp1 = fopen("logs\\tpccldr.err","w");
                        if (fp1 == NULL)
                                printf("ERROR:  Unable to open errorlog
file.\n");
                        else
                        {
                                fprintf(fp1, "[%s : %s] %s\n" , datebuf,
timebuf, szLastError);
                                fclose(fp1);
                        }

                        i++;

                }
}


void FormatDate ( char* szTimeCOutput )
{

                struct tm when;
                time_t now;

                time( &now );
                when  = *localtime( &now );

                mktime( &when );

                // odbc datetime format
                strftime( szTimeCOutput , 30 , "%Y-%m-%d %H:%M:%S.000", &when );

                return;

}

//====================================================================
//
// Function   : CheckDataBase
//
//====================================================================

void CheckDataBase()
{

                RETCODE         rc;

                char                                    szDriverString[300];
                char                                    szDriverStringOut[1024];
                char                                    TablesBitMap[9] =
{"000000000"};
                int                                                     i, ExitFlag;

                SQLSMALLINT                cbDriverStringOut;
                SQLCHAR                                 TabName[10];
                SQLINTEGER                 TabNameInd, TabCount, TabCountInd;


                ExitFlag = 0;

                SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv );

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

                SQLAllocHandle(SQL_HANDLE_DBC, henv , &v_hdbc);

                SQLSetConnectAttr(v_hdbc, SQL_COPT_SS_BCP, (void *)SQL_BCP_ON,
SQL_IS_INTEGER );

                // Open connection to SQL Server

                sprintf( szDriverString , "DRIVER={SQL
Server};SERVER=%s;UID=%s;PWD=%s;DATABASE=%s" ,
aptr->server,

aptr->user,

aptr->password,

aptr->database );

                rc = SQLSetConnectAttr( v_hdbc, SQL_ATTR_PACKET_SIZE,
(SQLPOINTER)aptr->pack_size, SQL_IS_UINTEGER );
                if (rc != SQL_SUCCESS)
                        HandleErrorDBC(v_hdbc);

                rc = SQLDriverConnect ( v_hdbc,
                                                                        NULL,

                (SQLCHAR*)&szDriverString[0] ,

                SQL_NTS,

                (SQLCHAR*)&szDriverStringOut[0],

                sizeof(szDriverStringOut),

                &cbDriverStringOut,

                SQL_DRIVER_NOPROMPT );

                // if the rc is SQL_ERROR, the the TPCC database probably does not
exist
                if (rc == SQL_ERROR)
                {
                        printf("The database TPCC does not appear to
exist!\n");
                        printf("\nCheck LOGS\\ directory for database
creation errors.\n");

                        // cleanup database connections and handles
                        SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
                        SQLDisconnect(v_hdbc);
                        SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);


                        // since there is not a database, exit back to
SETUP.CMD
                        exit(1);
                }

                if ( SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt) !=
SQL_SUCCESS )
                        HandleErrorDBC(v_hdbc);

                if ( SQLBindCol(v_hstmt, 1, SQL_C_ULONG, &TabCount, 0,
&TabCountInd) != SQL_SUCCESS )
                        HandleErrorSTMT(v_hstmt);

                // count the number of user tables from sysobjects
                rc = SQLExecDirect(v_hstmt, "select count(*) from sysobjects where
xtype = \'U\'", SQL_NTS);
                if ((rc != SQL_SUCCESS) && (rc != SQL_SUCCESS_WITH_INFO))
                        HandleErrorSTMT(v_hstmt);

                if ( SQLFetch(v_hstmt) != SQL_SUCCESS )
                        HandleErrorSTMT(v_hstmt);

                // if the number of tables is less than 9, select all the user
tables in TPCC
                if (TabCount != 9)
                {
                        SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);

                        SQLAllocHandle(SQL_HANDLE_STMT, v_hdbc , &v_hstmt);

                        if ( SQLBindCol(v_hstmt, 1, SQL_C_CHAR, &TabName,
sizeof(TabName), &TabNameInd) != SQL_SUCCESS )
                                HandleErrorSTMT(v_hstmt);

                        // select the list of user tables into a result set
                        rc = SQLExecDirect(v_hstmt, "select * from sysobjects
where xtype = \'U\'", SQL_NTS);
                        if ((rc != SQL_SUCCESS) && (rc !=
SQL_SUCCESS_WITH_INFO))
                                HandleErrorSTMT(v_hstmt);

                        // go through the result set and set the bitmap for
each found table
                        // set the bitmap to '1' if the table name is found

                        while ((rc = SQLFetch(v_hstmt)) != SQL_NO_DATA)
                        {
                                switch( TabName[0] )
                                {
                                case 'w':
                                                TablesBitMap[0] = '1';
                                                break;
                                case 'd':
                                                TablesBitMap[1] = '1';
                                                break;
                                case 'c':
                                                TablesBitMap[2] = '1';
                                                break;
                                case 'h':
                                                TablesBitMap[3] = '1';
                                                break;
                                case 'n':
                                                TablesBitMap[4] = '1';
                                                break;
                                case 'o':
                                                if (TabName[5] = 's')

                TablesBitMap[5] = '1';
                                                if (TabName[5] = '_')

                TablesBitMap[6] = '1';
                                                break;
                                case 'i':
                                                TablesBitMap[7] = '1';
                                                break;
                                case 's':
                                                TablesBitMap[8] = '1';
                                                break;
                                }
                        }

                        // a '0' ExitFlag means do NOT exit the loader early,
a '1' means exit the loader early
                        ExitFlag = 0;

                        // interate through the bitmap to display which
table(s) is actually missing
                        for (i = 0; i <= 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: 5700wh5drv5cl10seg
File Path: C:\BenchCraft\5700wh5drv5cl10seg.pro
Version: 3

Number of Engines: 5

Name: DRIVER01
Description:
Directory: c:\drv01
Machine: rte01
Parameter Set: TPCC
Index: 0
Seed: 1423
Configured Users: 11400
Pipe Name: DRIVER11809672718
Connect Rate: 5700
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER02
Description:
Directory: c:\drv02
Machine: rte02
Parameter Set: TPCC
Index: 10000000
Seed: 1423
Configured Users: 11400
Pipe Name: DRIVER21809739671
Connect Rate: 5700
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER03
Description:
Directory: c:\drv03
Machine: rte03
Parameter Set: TPCC
Index: 20000000
Seed: 1423
Configured Users: 11400
Pipe Name: DRIVER31809769828
Connect Rate: 5700
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER04
Description:
Directory: c:\drv04
Machine: rte04
Parameter Set: TPCC
Index: 30000000
Seed: 1423
Configured Users: 11400
Pipe Name: DRIVER41809841125
Connect Rate: 5700
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Name: DRIVER05
Description:
Directory: c:\drv05
Machine: rte05
Parameter Set: TPCC
Index: 40000000
Seed: 1423
Configured Users: 11400
Pipe Name: DRIVER5457781
Connect Rate: 5700
Start Rate: 0
Max. Concurrency: -1
Concurrency Rate: 0
CLIENT_NURAND: 233
CPU: 0

Number of User groups: 10

Driver Engine: DRIVER01
IIS Server: cl011
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1 - 570
w_id Min Warehouse: 1
w_id Max Warehouse: 5700
Scale: Normal
User Count: 5700
District id: 1
Scale Down: No

Driver Engine: DRIVER02
IIS Server: cl021
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 571 - 1140
w_id Min Warehouse: 1
w_id Max Warehouse: 5700
Scale: Normal
User Count: 5700
District id: 1
Scale Down: No

Driver Engine: DRIVER03
IIS Server: cl031
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1141 - 1710
w_id Min Warehouse: 1
w_id Max Warehouse: 5700
Scale: Normal
User Count: 5700
District id: 1
Scale Down: No

Driver Engine: DRIVER04
IIS Server: cl041
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 1711 - 2280
w_id Min Warehouse: 1
w_id Max Warehouse: 5700
Scale: Normal
User Count: 5700
District id: 1
Scale Down: No

Driver Engine: DRIVER05
IIS Server: cl051
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 2281 - 2850
w_id Min Warehouse: 1
w_id Max Warehouse: 5700
Scale: Normal
User Count: 5700
District id: 1
Scale Down: No

Driver Engine: DRIVER01
IIS Server: cl012
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 2851 - 3420
w_id Min Warehouse: 1
w_id Max Warehouse: 5700
Scale: Normal
User Count: 5700
District id: 1
Scale Down: No

Driver Engine: DRIVER02
IIS Server: cl022
SQL Server: shasta
Database: tpcc

User: sa
Protocol: HTML
w_id Range: 3421 - 3990
w_id Min Warehouse: 1
w_id Max Warehouse: 5700
Scale: Normal
User Count: 5700
District id: 1
Scale Down: No

Driver Engine: DRIVER03
IIS Server: cl032
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 3991 - 4560
w_id Min Warehouse: 1
w_id Max Warehouse: 5700
Scale: Normal
User Count: 5700
District id: 1
Scale Down: No

Driver Engine: DRIVER04
IIS Server: cl042
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 4561 - 5130
w_id Min Warehouse: 1
w_id Max Warehouse: 5700
Scale: Normal
User Count: 5700
District id: 1
Scale Down: No

Driver Engine: DRIVER05
IIS Server: cl052
SQL Server: shasta
Database: tpcc
User: sa
Protocol: HTML
w_id Range: 5131 - 5700
w_id Min Warehouse: 1
w_id Max Warehouse: 5700
Scale: Normal
User Count: 5700
District id: 1
Scale Down: No

Number of Parameter Sets: 2

~Default
Default Parameter Set

	Txn Weight	Think Time	Key Time	RT Delay	RT Menu	Fence	Delay
New Order	10.00	12.05	18.01	0.10	0.10	5.00	
Payment	10.00	12.05	3.01	0.10	0.10	5.00	
Delivery	1.00	5.05	2.01	0.10	0.10	5.00	
Stock Level	1.00	5.05	2.01	0.10	0.10	20.00	
Order Status	1.00	10.05	2.01	0.10	0.10	5.00	

TPCC

	Txn Weight	Think Time	Key Time	RT Delay	RT Menu	Fence	Delay
New Order	44.92	12.07	18.01	0.10	0.10	5.00	
Payment	43.02	12.07	3.01	0.10	0.10	5.00	
Delivery	4.02	5.07	2.01	0.10	0.10	5.00	
Stock Level	4.02	5.07	2.01	0.10	0.10	20.00	
Order Status	4.02	10.07	2.01	0.10	0.10	5.00	

<Server Configuration>

Services

Following services were activated during the measurement.

COM+ Event System
Event Log
Logical Disk Manager
Network Connections
Plug and Play
Remote Procedure Call (RPC)
Windows Management Instrumentation

Network Adapter Tunings

None

Registry Tunings

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\dac2w2k]
"Start"=dword:00000000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\dac2w2k\Parameters\Device]
"DriverParameter"="ConfigureSIR=16"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\dac2w2k\Enum]
"Count"=dword:00000006
"NextInstance"=dword:00000006

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\I/O System]
"CountOperations"=dword:00000000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory Management]
"SystemPages"=dword:00033000
"DontVerifyRandomDrivers"=dword:00000001

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory Management\PrefetchParameters]
"VideoInitTime"=dword:000001a5

Boot loader settings

[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Windows .NET Server, Enterprise" /fastdetect /PAE.

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: 03/25/03 13:45:00
System Name: SHASTA
[System Summary]

Item	Value
OS Name	Microsoft(R) Windows(R) .NET Server 2003, Enterprise Edition
Version	5.2.3718 Build 3718
OS Manufacturer	Microsoft Corporation
Activation Status	Activation Pending (46 days remaining)
System Name	SHASTA
System Manufacturer	NEC
System Model	Express5800/140Rc-4 [N8100-820]
System Type	X86-based PC
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1992 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1992 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1992 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1992 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1992 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1992 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1992 Mhz
Processor	x86 Family 15 Model 2 Stepping 2 GenuineIntel ~1992 Mhz
BIOS Version/Date	NEC Corporation NSH40.GH5.0006.P06.0212241030, 12/24/2002
SMBIOS Version	2.3
Windows Directory	C:\WINDOWS
System Directory	C:\WINDOWS\system32
Boot Device	\Device\HarddiskVolume1
Locale	United States
Hardware Abstraction Layer	Version = "5.2.3718.0 (dnsrv.021114-1947)"
User Name	SHASTA\Administrator
Time Zone	Tokyo Standard Time
Total Physical Memory	24,577.00 MB
Available Physical Memory	74.65 MB
Total Virtual Memory	49.44 GB
Available Virtual Memory	2.10 GB
Page File Space	25.63 GB
Page File	C:\pagefile.sys

[Hardware Resources]

[Conflicts/Sharing]

Resource	Device
Memory Address 0xF7800000-0xF87FFFFF	PCI bus
Memory Address 0xF7800000-0xF87FFFFF	DEC 21154 PCI to PCI bridge
Memory Address 0xF7800000-0xF87FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
I/O Port 0x00000000-0x000003AF	PCI bus
I/O Port 0x00000000-0x000003AF	Direct memory access controller
Memory Address 0xFC800000-0xFD7FFFFF	PCI bus
Memory Address 0xFC800000-0xFD7FFFFF	DEC 21154 PCI to PCI bridge
Memory Address 0xFC800000-0xFD7FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
Memory Address 0xF9000000-0xF97FFFFF	DEC 21154 PCI to PCI bridge
Memory Address 0xF9000000-0xF97FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
Memory Address 0xF8800000-0xF99FFFFF	PCI bus
Memory Address 0xF8800000-0xF99FFFFF	DEC 21154 PCI to PCI bridge
Memory Address 0xF8800000-0xF99FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
Memory Address 0xF7000000-0xF77FFFFF	DEC 21154 PCI to PCI bridge
Memory Address 0xF7000000-0xF77FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
Memory Address 0xF4000000-0xF5FFFFFF	PCI bus
Memory Address 0xF4000000-0xF5FFFFFF	RAGE XL PCI Family (Microsoft Corporation)
I/O Port 0x000003C0-0x000003DF	PCI bus
I/O Port 0x000003C0-0x000003DF	RAGE XL PCI Family (Microsoft Corporation)
I/O Port 0x00009000-0x00009FFF	DEC 21154 PCI to PCI bridge
I/O Port 0x00009000-0x00009FFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
I/O Port 0x00006000-0x00007FFF	PCI bus
I/O Port 0x00006000-0x00007FFF	DEC 21154 PCI to PCI bridge

I/O Port 0x00006000-0x00007FFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

Memory Address 0xFB000000-0xFC1FFFFF PCI bus
Memory Address 0xFB000000-0xFC1FFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xFB000000-0xFC1FFFFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

Memory Address 0xFD000000-0xFD7FFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xFD000000-0xFD7FFFFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

Memory Address 0xF6800000-0xF6FFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xF6800000-0xF6FFFFFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

Memory Address 0xF6000000-0xF63FFFFF PCI bus
Memory Address 0xF6000000-0xF63FFFFF Adaptec AIC-7902-based Ultra320 SCSI

I/O Port 0x00002420-0x000034FF PCI bus
I/O Port 0x00002420-0x000034FF Intel (R) 82544GC based network connection

I/O Port 0x00005000-0x00005FFF DEC 21154 PCI to PCI bridge
I/O Port 0x00005000-0x00005FFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

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

I/O Port 0x00007000-0x00007FFF DEC 21154 PCI to PCI bridge
I/O Port 0x00007000-0x00007FFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

Memory Address 0xFA000000-0xFAFFFFFF PCI bus
Memory Address 0xFA000000-0xFAFFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xFA000000-0xFAFFFFFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

Memory Address 0xF8000000-0xF87FFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xF8000000-0xF87FFFFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

I/O Port 0x000003B0-0x000003BB PCI bus
I/O Port 0x000003B0-0x000003BB RAGE XL PCI Family (Microsoft Corporation)

Memory Address 0xFB800000-0xFBFFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xFB800000-0xFBFFFFFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

Memory Address 0xFA800000-0xFAFFFFFF DEC 21154 PCI to PCI bridge
Memory Address 0xFA800000-0xFAFFFFFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

I/O Port 0x00004000-0x00005FFF PCI bus
I/O Port 0x00004000-0x00005FFF DEC 21154 PCI to PCI bridge
I/O Port 0x00004000-0x00005FFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

I/O Port 0x00008000-0x00009FFF PCI bus
I/O Port 0x00008000-0x00009FFF DEC 21154 PCI to PCI bridge
I/O Port 0x00008000-0x00009FFF Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)

[DMA]

Resource	Device	Status
Channel 4	Direct memory access controller	OK
Channel 1	ECP Printer Port (LPT1)	OK
Channel 2	Standard floppy disk 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	RAGE XL PCI Family (Microsoft Corporation)	OK
0x000003BC-0x000003BF	PCI bus	OK
0x000003C0-0x000003DF	PCI bus	OK
0x000003C0-0x000003DF	RAGE XL PCI Family (Microsoft Corporation)	OK
0x000003E0-0x00000CF7	PCI bus	OK
0x00000D00-0x00000FFF	PCI bus	OK
0x00001FF0-0x0000240F	PCI bus	OK
0x00002000-0x000020FF	RAGE XL PCI Family (Microsoft Corporation)	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
0x00000070-0x00000071	System CMOS/real time clock	OK
0x00000010-0x0000001F	Direct memory access controller	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
0x000000F0-0x000000FF	Numeric data processor	OK
0x00000061-0x00000061	System speaker	OK
0x0000002E-0x0000002F	Motherboard resources	OK
0x00000540-0x0000055F	Motherboard resources	OK
0x00000560-0x00000563	Motherboard resources	OK
0x00000564-0x00000567	Motherboard resources	OK
0x00000568-0x0000056F	Motherboard resources	OK
0x000000E0-0x000000FF	Motherboard resources	OK
0x00000600-0x0000061F	Motherboard resources	OK
0x00000580-0x0000058D	Motherboard resources	OK
0x00000092-0x00000092	Motherboard resources	OK
0x00000B04-0x00000B04	Motherboard resources	OK
0x00000419-0x0000041B	Motherboard resources	OK
0x0000041D-0x0000041F	Motherboard resources	OK
0x000004D0-0x000004D1	Motherboard resources	OK
0x000004D6-0x000004D6	Motherboard resources	OK
0x00000C00-0x00000C01	Motherboard resources	OK
0x00000C06-0x00000C08	Motherboard resources	OK
0x00000C14-0x00000C14	Motherboard resources	OK
0x00000C49-0x00000C4A	Motherboard resources	OK
0x00000C50-0x00000C51	Motherboard resources	OK
0x00000C52-0x00000C52	Motherboard resources	OK
0x00000C6C-0x00000C6C	Motherboard resources	OK
0x00000C6F-0x00000C6F	Motherboard resources	OK
0x00000CD6-0x00000CD7	Motherboard resources	OK
0x00000F50-0x00000F58	Motherboard resources	OK
0x00000374-0x00000375	Motherboard resources	OK
0x0000FE00-0x0000FE20	Motherboard resources	OK
0x00000220-0x00000220	Motherboard resources	OK
0x00000225-0x00000225	Motherboard resources	OK
0x00000228-0x00000228	Motherboard resources	OK
0x0000022A-0x0000022E	Motherboard resources	OK
0x00000102-0x00000105	Motherboard resources	OK

0x00000107-0x00000107 Motherboard resources
OK
0x000003F8-0x000003FF Communications Port (COM1)
OK
0x000002F8-0x000002FF Communications Port (COM2)
OK
0x00000378-0x0000037F ECP Printer Port (LPT1)
OK
0x00000778-0x0000077F ECP Printer Port (LPT1)
OK
0x000003F0-0x000003F5 Standard floppy disk controller
OK
0x000003F7-0x000003F7 Standard floppy disk controller
OK
0x00000CA6-0x00000CA6 Microsoft ACPI-Compliant
Embedded Controller OK
0x00000CA7-0x00000CA7 Microsoft ACPI-Compliant
Embedded Controller OK
0x00002400-0x0000240F CSB5 IDE Controller OK
0x000001F0-0x000001F7 Primary IDE Channel OK
0x000003F6-0x000003F6 Primary IDE Channel OK
0x00000170-0x00000177 Secondary IDE Channel
OK
0x00000376-0x00000376 Secondary IDE Channel
OK
0x00000A79-0x00000A79 ISAPNP Read Data Port
OK
0x00000279-0x00000279 ISAPNP Read Data Port
OK
0x00000274-0x00000277 ISAPNP Read Data Port
OK
0x00002420-0x000034FF PCI bus OK
0x00002420-0x000034FF Intel (R) 82544GC based network
connection OK
0x00002C00-0x00002CFF Adaptec AIC-7902-based Ultra320
SCSI OK
0x00002800-0x000028FF Adaptec AIC-7902-based Ultra320
SCSI OK
0x00003400-0x000034FF Adaptec AIC-7902-based Ultra320
SCSI OK
0x00003000-0x000030FF Adaptec AIC-7902-based Ultra320
SCSI OK
0x00004000-0x00005FFF PCI bus OK
0x00004000-0x00005FFF DEC 21154 PCI to PCI bridge
OK
0x00004000-0x00005FFF Mylex eXtremeRAID 2000 Disk
Array Controller (Accelerated) OK
0x00005000-0x00005FFF DEC 21154 PCI to PCI bridge
OK
0x00005000-0x00005FFF Mylex eXtremeRAID 2000 Disk
Array Controller (Accelerated) OK
0x00006000-0x00007FFF PCI bus OK
0x00006000-0x00007FFF DEC 21154 PCI to PCI bridge
OK
0x00006000-0x00007FFF Mylex eXtremeRAID 2000 Disk
Array Controller (Accelerated) OK
0x00007000-0x00007FFF DEC 21154 PCI to PCI bridge
OK
0x00007000-0x00007FFF Mylex eXtremeRAID 2000 Disk
Array Controller (Accelerated) OK
0x00008000-0x00009FFF PCI bus OK
0x00008000-0x00009FFF DEC 21154 PCI to PCI bridge
OK
0x00008000-0x00009FFF Mylex eXtremeRAID 2000 Disk
Array Controller (Accelerated) OK
0x00009000-0x00009FFF DEC 21154 PCI to PCI bridge
OK
0x00009000-0x00009FFF Mylex eXtremeRAID 2000 Disk
Array Controller (Accelerated) OK
0x00000900-0x0000093F Motherboard resources
OK
0x00000940-0x0000097F Motherboard resources
OK

[IRQs]

Resource	Device	Status
IRQ 9	Microsoft ACPI-Compliant System	OK
IRQ 20	RAGE XL PCI Family (Microsoft Corporation)	OK
IRQ 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	OK
IRQ 12	PS/2 Compatible Mouse	OK
IRQ 8	System CMOS/real time clock	OK
IRQ 0	System timer	OK
IRQ 13	Numeric data processor	OK
IRQ 4	Communications Port (COM1)	OK
IRQ 3	Communications Port (COM2)	OK
IRQ 6	Standard floppy disk controller	OK
IRQ 14	Primary IDE Channel	OK
IRQ 10	ServerWorks (RCC) PCI to USB Open Host Controller	OK
IRQ 19	Intel (R) 82544GC based network connection	OK
IRQ 16	Adaptec AIC-7902-based Ultra320 SCSI	OK
IRQ 17	Adaptec AIC-7902-based Ultra320 SCSI	OK
IRQ 24	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
IRQ 25	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
IRQ 26	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
IRQ 27	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
IRQ 28	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
IRQ 29	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK

[Memory]

Resource	Device	Status
0xA0000-0xBFFFF	PCI bus	OK
0xA0000-0xBFFFF	RAGE XL PCI Family (Microsoft Corporation)	OK
0xC0000-0xC3FFF	PCI bus	OK
0xC4000-0xC7FFF	PCI bus	OK
0xC8000-0xCBFFF	PCI bus	OK
0xCC000-0xCFFFF	PCI bus	OK
0xD0000-0xD3FFF	PCI bus	OK
0xD4000-0xD7FFF	PCI bus	OK
0xD8000-0xDBFFF	PCI bus	OK
0xDC000-0xDFFFF	PCI bus	OK
0xE0000-0xFFFFF	PCI bus	OK
0xF4000000-0xF5FFFFFF	PCI bus	OK
0xF4000000-0xF5FFFFFF	RAGE XL PCI Family (Microsoft Corporation)	OK
0xF5000000-0xF5FFFFFF	RAGE XL PCI Family (Microsoft Corporation)	OK
0xF4001000-0xF4001FFF	ServerWorks (RCC) PCI to USB Open Host Controller	OK
0xF6000000-0xF63FFFFF	PCI bus	OK
0xF6000000-0xF63FFFFF	Adaptec AIC-7902-based Ultra320 SCSI	OK
0xF6040000-0xF605FFFF	Intel (R) 82544GC based network connection	OK
0xF6020000-0xF603FFFF	Intel (R) 82544GC based network connection	OK
0xF6002000-0xF6003FFF	Adaptec AIC-7902-based Ultra320 SCSI	OK
0xF6500000-0xF77FFFFF	PCI bus	OK
0xF7800000-0xF87FFFFF	PCI bus	OK
0xF7800000-0xF87FFFFF	DEC 21154 PCI to PCI bridge	OK
0xF7800000-0xF87FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
0xF6800000-0xF6FFFFFF	DEC 21154 PCI to PCI bridge	OK
0xF6800000-0xF6FFFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
0xF7000000-0xF77FFFFF	DEC 21154 PCI to PCI bridge	OK
0xF7000000-0xF77FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
0xF8000000-0xF87FFFFF	DEC 21154 PCI to PCI bridge	OK
0xF8000000-0xF87FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
0xF8800000-0xF99FFFFF	PCI bus	OK
0xF8800000-0xF99FFFFF	DEC 21154 PCI to PCI bridge	OK
0xF8800000-0xF99FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
0xFA000000-0xFAFFFFFF	PCI bus	OK
0xFA000000-0xFAFFFFFF	DEC 21154 PCI to PCI bridge	OK
0xFA000000-0xFAFFFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
0xF9000000-0xF97FFFFF	DEC 21154 PCI to PCI bridge	OK
0xF9000000-0xF97FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
0xFA800000-0xFAFFFFFF	DEC 21154 PCI to PCI bridge	OK
0xFA800000-0xFAFFFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
0xFB000000-0xFC1FFFFF	PCI bus	OK
0xFB000000-0xFC1FFFFF	DEC 21154 PCI to PCI bridge	OK
0xFB000000-0xFC1FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
0xFC800000-0xFD7FFFFF	PCI bus	OK
0xFC800000-0xFD7FFFFF	DEC 21154 PCI to PCI bridge	OK
0xFC800000-0xFD7FFFFF	Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)	OK
0xFB800000-0xFBFFFFFF	DEC 21154 PCI to PCI bridge	OK

```
0xFB800000-0xFBFFFFFF   Mylex eXtremeRAID 2000 Disk
Array Controller (Accelerated)   OK
0xFD000000-0xFD7FFFFF   DEC 21154 PCI to PCI bridge
        OK
0xFD000000-0xFD7FFFFF   Mylex eXtremeRAID 2000 Disk
Array Controller (Accelerated)   OK

[Components]



[Multimedia]



[Audio Codecs]

CODEC   Manufacturer            Description Status      File
        Version     Size        Creation Date
c:\windows\system32\sl_anet.acm Sipro Lab Telecom Inc.
        Sipro Lab Telecom Audio Codec   OK
        C:\WINDOWS\system32\SL_ANET.ACM     3.02
        84.00 KB (86,016 bytes)         11/18/2002 9:00 PM
c:\windows\system32\msaud32.acm         Microsoft Corporation
        Windows Media Audio Codec       OK
        C:\WINDOWS\system32\MSAUD32.ACM
        8.00.00.4487        288.00 KB (294,912 bytes)
        11/18/2002 9:00 PM
c:\windows\system32\msg723.acm          Microsoft Corporation
        OK      C:\WINDOWS\system32\MSG723.ACM
        4.4.4000    116.00 KB (118,784 bytes)       3/10/2003
7:25 PM
c:\windows\system32\tssoft32.acm        DSP GROUP, INC.
        OK      C:\WINDOWS\system32\TSSOFT32.ACM
        1.01    9.50 KB (9,728 bytes)   11/18/2002 9:00 PM
c:\windows\system32\msg711.acm          Microsoft Corporation
        OK      C:\WINDOWS\system32\MSG711.ACM
        5.2.3718.0 (dnsrv.021114-1947)  10.00 KB (10,240
bytes)  11/18/2002 9:00 PM
c:\windows\system32\msgsm32.acm         Microsoft Corporation
        OK      C:\WINDOWS\system32\MSGSM32.ACM
        5.2.3718.0 (dnsrv.021114-1947)  20.50 KB (20,992
bytes)  11/18/2002 9:00 PM
c:\windows\system32\imaadp32.acm        Microsoft Corporation
        OK      C:\WINDOWS\system32\IMAADP32.ACM
        5.2.3718.0 (dnsrv.021114-1947)  15.50 KB (15,872
bytes)  11/18/2002 9:00 PM
c:\windows\system32\msadp32.acm         Microsoft Corporation
        OK      C:\WINDOWS\system32\MSADP32.ACM
        5.2.3718.0 (dnsrv.021114-1947)  14.50 KB (14,848
bytes)  11/18/2002 9:00 PM
c:\windows\system32\l3codeca.acm        Fraunhofer Institut
Integrierte Schaltungen IIS     Fraunhofer IIS MPEG Layer-3
Codec   OK      C:\WINDOWS\system32\L3CODECA.ACM
        1, 9, 0, 0305       284.00 KB (290,816 bytes)
        11/18/2002 9:00 PM

[Video Codecs]

CODEC   Manufacturer            Description Status      File
        Version     Size        Creation Date
c:\windows\system32\msvidc32.dll Microsoft Corporation
        OK      C:\WINDOWS\system32\MSVIDC32.DLL
        5.2.3718.0 (dnsrv.021114-1947)  26.50 KB (27,136
bytes)  11/18/2002 9:00 PM
c:\windows\system32\ir32_32.dll Not Available
        OK      C:\WINDOWS\system32\IR32_32.DLL
        Not Available       194.50 KB (199,168 bytes)
        11/18/2002 9:00 PM
c:\windows\system32\tsbyuv.dll  Microsoft Corporation
        OK      C:\WINDOWS\system32\TSBYUV.DLL
        5.2.3718.0 (dnsrv.021114-1947)  8.00 KB (8,192 bytes)
        11/16/2002 12:36 AM
c:\windows\system32\iyuv_32.dll Microsoft Corporation
        OK      C:\WINDOWS\system32\IYUV_32.DLL
        5.2.3718.0 (dnsrv.021114-1947)  45.00 KB (46,080
bytes)  11/16/2002 12:35 AM
c:\windows\system32\msrle32.dll Microsoft Corporation
        OK      C:\WINDOWS\system32\MSRLE32.DLL
        5.2.3718.0 (dnsrv.021114-1947)  10.50 KB (10,752
bytes)  11/18/2002 9:00 PM
c:\windows\system32\iccvid.dll  Radius Inc.      OK
        C:\WINDOWS\system32\ICCVID.DLL      1.10.0.6
        108.00 KB (110,592 bytes)       11/18/2002 9:00 PM
c:\windows\system32\msyuv.dll   Microsoft Corporation
        OK      C:\WINDOWS\system32\MSYUV.DLL
        5.2.3718.0 (dnsrv.021114-1947)  16.50 KB (16,896
bytes)  11/16/2002 12:35 AM
c:\windows\system32\msh263.drv  Microsoft Corporation
        OK      C:\WINDOWS\system32\MSH263.DRV
        4.4.4000    284.00 KB (290,816 bytes)       11/16/2002
12:34 AM
c:\windows\system32\msh261.drv  Microsoft Corporation
        OK      C:\WINDOWS\system32\MSH261.DRV
        4.4.4000    180.00 KB (184,320 bytes)       3/10/2003
7:25 PM

[CD-ROM]

Item    Value
Drive   D:
Description CD-ROM Drive
Media Loaded    No
Media Type      CD-ROM
Name    MATSHITA CD-ROM CR-594
Manufacturer    (Standard CD-ROM drives)
Status  OK
Transfer Rate   Not Available
SCSI Target ID  0
PNP Device ID   IDE\CDROMMATSHITA_CD-ROM_CR-
594_____YS1S____\5&FB0C83D&0&0.0.0
Driver  c:\windows\system32\drivers\cdrom.sys (5.2.3718.0
(dnsrv.021114-1947), 47.38 KB (48,512 bytes), 11/18/2002 9:00 PM)

[Sound Device]

Item    Value

[Display]

Item    Value
Name    RAGE XL PCI Family (Microsoft Corporation)
PNP Device ID
        PCI\VEN_1002&DEV_4752&SUBSYS_81361033&REV_
27\3&267A616A&0&10
Adapter Type    ATI RAGE XL PCI (B41), ATI Technologies
Inc. compatible
Adapter Description     RAGE XL PCI Family (Microsoft Corporation)
Adapter RAM     4.00 MB (4,194,304 bytes)
Installed Drivers       ati2drad.dll
Driver Version  5.10.3663.6013
INF File    atiixpad.inf (ati2mpad section)
Color Planes    1
Color Table Entries     65536
Resolution  1024 x 768 x 60 hertz
Bits/Pixel  16
Memory Address  0xF5000000-0xF5FFFFFF
I/O Port    0x00002000-0x000020FF
Memory Address  0xF4000000-0xF5FFFFFF
IRQ Channel     IRQ 20
I/O Port    0x000003B0-0x000003BB
I/O Port    0x000003C0-0x000003DF
Memory Address  0xA0000-0xBFFFF
Driver  c:\windows\system32\drivers\ati2mpad.sys
(5.10.3663.6013, 335.38 KB (343,424 bytes), 3/11/2003 4:17 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\4&35118DFF&0
Number of Function Keys     12
I/O Port    0x00000060-0x00000060
I/O Port    0x00000064-0x00000064
IRQ Channel     IRQ 1
Driver  c:\windows\system32\drivers\i8042prt.sys (5.2.3718.0
(dnsrv.021114-1947), 50.63 KB (51,840 bytes), 11/18/2002 9:00 PM)

[Pointing Device]

Item    Value
Hardware Type   PS/2 Compatible Mouse
Number of Buttons   3
Status  OK
PNP Device ID   ACPI\PNP0F13\4&35118DFF&0
Power Management Supported  No
Double Click Threshold      6
Handedness      Right Handed Operation
IRQ Channel     IRQ 12
Driver  c:\windows\system32\drivers\i8042prt.sys (5.2.3718.0
(dnsrv.021114-1947), 50.63 KB (51,840 bytes), 11/18/2002 9:00 PM)

[Modem]

Item    Value
```

[Network]

[Adapter]

Item Value
Name [00000001] Intel (R) 82544GC based network connection
Adapter Type Ethernet 802.3
Product Type Intel (R) 82544GC based network connection
Installed Yes
PNP Device ID PCI\VEN_8086&DEV_100D&SUBSYS_81361033&REV_02\3&13C0B0C5&0&18
Last Reset 3/20/2003 2:02 PM
Index 1
Service Name E1000
IP Address 10.1.1.201
IP Subnet 255.255.255.0
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:00:4C:9F:20:51
Memory Address 0xF6040000-0xF605FFFF
Memory Address 0xF6020000-0xF603FFFF
I/O Port 0x00002420-0x000034FF
IRQ Channel IRQ 19
Driver c:\windows\system32\drivers\e1000325.sys (6.3.6.3 built by: WinDDK, 97.50 KB (99,840 bytes), 3/11/2003 4:17 AM)

Name [00000002] RAS Async Adapter
Adapter Type Not Available
Product Type RAS Async Adapter
Installed Yes
PNP Device ID Not Available
Last Reset 3/20/2003 2:02 PM
Index 2
Service Name AsyncMac
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available

Name [00000003] WAN Miniport (L2TP)
Adapter Type Not Available
Product Type WAN Miniport (L2TP)
Installed Yes
PNP Device ID ROOT\MS_L2TPMINIPORT\0000
Last Reset 3/20/2003 2:02 PM
Index 3
Service Name Rasl2tp
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver c:\windows\system32\drivers\rasl2tp.sys (5.2.3718.0 (dnsrv.021114-1947), 61.63 KB (63,104 bytes), 11/18/2002 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 3/20/2003 2:02 PM
Index 4
Service Name PptpMiniport
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 50:50:54:50:30:30
Driver c:\windows\system32\drivers\raspptp.sys (5.2.3718.0 (dnsrv.021114-1947), 56.63 KB (57,984 bytes), 11/18/2002 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 3/20/2003 2:02 PM
Index 5
Service Name RasPppoe
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 33:50:6F:45:30:30
Driver c:\windows\system32\drivers\raspppoe.sys (5.2.3718.0 (dnsrv.021114-1947), 36.88 KB (37,760 bytes), 11/18/2002 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 3/20/2003 2:02 PM
Index 6
Service Name Raspti
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver c:\windows\system32\drivers\raspti.sys (5.2.3718.0 (dnsrv.021114-1947), 16.38 KB (16,768 bytes), 11/18/2002 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 3/20/2003 2:02 PM
Index 7
Service Name NdisWan
IP Address Not Available
IP Subnet Not Available
Default IP Gateway Not Available
DHCP Enabled No
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address Not Available
Driver c:\windows\system32\drivers\ndiswan.sys (5.2.3718.0 (dnsrv.021114-1947), 87.25 KB (89,344 bytes), 11/18/2002 9:00 PM)

[Protocol]

Item Value
Name MSAFD Tcpip [TCP/IP]
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 16 bytes
Maximum Message Size 0 bytes
Message Oriented No
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data Yes
Supports Graceful Closing Yes
Supports Guaranteed Bandwidth No
Supports Multicasting No

Name MSAFD Tcpip [UDP/IP]
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 16 bytes
Maximum Message Size 63.93 KB (65,467 bytes)
Message Oriented Yes
Minimum Address Size 16 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No
Supports Multicasting Yes

Name RSVP UDP Service Provider
Connectionless Service Yes

Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 16 bytes
Maximum Message Size 63.93 KB (65,467 bytes)
Message Oriented Yes
Minimum Address Size16 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 Size16 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption Yes
Supports Expedited Data Yes
Supports Graceful Closing Yes
Supports Guaranteed Bandwidth No
Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{865E2347-B873-43B9-9AF2-194481602961}] SEQPACKET 0
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size20 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No
Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{865E2347-B873-43B9-9AF2-194481602961}] DATAGRAM 0
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size20 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No
Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{B2331F27-0569-4EA8-9DAB-EC3D674B5BE3}] SEQPACKET 1
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size20 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No
Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{B2331F27-0569-4EA8-9DAB-EC3D674B5BE3}] DATAGRAM 1
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size20 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No
Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{B00B0BDA-C6CF-4ADA-937B-6F91A00EE945}] SEQPACKET 2
Connectionless Service No
Guarantees Delivery Yes
Guarantees Sequencing Yes
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size20 bytes
Pseudo Stream Oriented No
Supports Broadcasting No
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No
Supports Multicasting No

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{B00B0BDA-C6CF-4ADA-937B-6F91A00EE945}] DATAGRAM 2
Connectionless Service Yes
Guarantees Delivery No
Guarantees Sequencing No
Maximum Address Size 20 bytes
Maximum Message Size 62.50 KB (64,000 bytes)
Message Oriented Yes
Minimum Address Size20 bytes
Pseudo Stream Oriented No
Supports Broadcasting Yes
Supports Connect Data No
Supports Disconnect Data No
Supports Encryption No
Supports Expedited Data No
Supports Graceful Closing No
Supports Guaranteed Bandwidth No
Supports Multicasting No

[WinSock]

Item Value
File c:\windows\system32\winsock.dll
Size 2.80 KB (2,864 bytes)
Version 3.10

File c:\windows\system32\wsock32.dll
Size 22.00 KB (22,528 bytes)
Version 5.2.3718.0 (dnsrv.021114-1947)

[Ports]

[Serial]

Item Value
Name Communications Port (COM1)
Status OK
PNP Device ID ACPI\PNP0501\1
Maximum Input Buffer Size 0
Maximum Output Buffer Size No
Settable Baud Rate Yes
Settable Data Bits Yes
Settable Flow Control Yes
Settable Parity Yes
Settable Parity Check Yes
Settable Stop Bits Yes
Settable RLSD Yes
Supports RLSD Yes
Supports 16 Bit Mode No
Supports Special Characters No
Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy No

Abort Read/Write on Error No
Binary Mode Enabled Yes
Continue XMit on XOff No
CTS Outflow Control No
Discard NULL Bytes No
DSR Outflow Control 0
DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0
Error Replacement Enabled No
Event Character 0
Parity Check Enabled No
RTS Flow Control Type Enable
XOff Character 19
XOffXMit Threshold 512
XOn Character 17
XOnXMit Threshold 2048
XOnXOff InFlow Control 0
XOnXOff OutFlow Control 0
I/O Port 0x000003F8-0x000003FF
IRQ Channel IRQ 4
Driver c:\windows\system32\drivers\serial.sys (5.2.3718.0 (dnsrv.021114-1947), 61.63 KB (63,104 bytes), 11/18/2002 9:00 PM)

Name Communications Port (COM2)
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 0x000002F8-0x000002FF
IRQ Channel IRQ 3
Driver c:\windows\system32\drivers\serial.sys (5.2.3718.0 (dnsrv.021114-1947), 61.63 KB (63,104 bytes), 11/18/2002 9:00 PM)

[Parallel]

Item Value
Name LPT1
PNP Device ID ACPI\PNP0401\4&35118DFF&0
I/O Port 0x00000378-0x0000037F
I/O Port 0x00000778-0x0000077F
DMA Channel Channel 1
Driver c:\windows\system32\drivers\parport.sys (5.2.3718.0 (dnsrv.021114-1947), 74.88 KB (76,672 bytes), 11/15/2002 7:25 AM)

[Storage]

[Drives]

Item Value
Drive A:
Description 3 1/2 Inch Floppy Drive

Drive C:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 17.08 GB (18,342,338,560 bytes)
Free Space 11.76 GB (12,625,969,152 bytes)
Volume Name
Volume Serial Number 0C48207A

Drive D:
Description CD-ROM Disc

Drive E:
Description Local Fixed Disk
Compressed Not Available
File System Not Available
Size Not Available
Free Space Not Available
Volume Name Not Available
Volume Serial Number Not Available

Drive F:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 422.51 GB (453,665,316,864 bytes)
Free Space 237.87 GB (255,415,398,400 bytes)
Volume Name b1
Volume Serial Number 108020E9

Drive G:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 422.51 GB (453,665,316,864 bytes)
Free Space 237.24 GB (254,736,334,848 bytes)
Volume Name b2
Volume Serial Number 303D02C3

Drive H:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 422.51 GB (453,665,316,864 bytes)
Free Space 237.87 GB (255,415,455,744 bytes)
Volume Name b3
Volume Serial Number 842148D1

Drive I:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 422.51 GB (453,665,316,864 bytes)
Free Space 237.87 GB (255,415,521,280 bytes)
Volume Name b4
Volume Serial Number A02A5B2A

Drive J:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 422.51 GB (453,665,316,864 bytes)
Free Space 237.87 GB (255,415,521,280 bytes)
Volume Name b5
Volume Serial Number 58359B37

Drive L:
Description Local Fixed Disk
Compressed No
File System NTFS
Size 19.49 GB (20,925,108,224 bytes)
Free Space 19.42 GB (20,856,799,232 bytes)
Volume Name New Volume
Volume Serial Number CCA88444

Drive Z:
Description Network Connection
Provider Name \\cl02\c$

[Disks]

Item Value
Description \\.\PHYSICALDRIVE2
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 2
SCSI Bus 4
SCSI Logical Unit 0
SCSI Port 5
SCSI Target ID 0
Sectors/Track 63
Size 119.49 GB (128,297,917,440 bytes)

Total Cylinders 15,598
Total Sectors 250,581,870
Total Tracks 3,977,490
Tracks/Cylinder 255
Partition Disk #2, Partition #0
Partition Size 100.00 GB (107,372,772,864 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #2, Partition #1
Partition Size 19.49 GB (20,925,112,320 bytes)
Partition Starting Offset 107,372,805,120 bytes

Description \\.\PHYSICALDRIVE3
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 4
SCSI Logical Unit 0
SCSI Port 6
SCSI Target ID 0
Sectors/Track 63
Size 614.52 GB (659,840,186,880 bytes)
Total Cylinders 80,221
Total Sectors 1,288,750,365
Total Tracks 20,456,355
Tracks/Cylinder 255
Partition Disk #3, Partition #0
Partition Size 72.01 GB (77,317,599,744 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #3, Partition #1
Partition Size 120.01 GB (128,857,236,480 bytes)
Partition Starting Offset 77,317,632,000 bytes
Partition Disk #3, Partition #2
Partition Size 422.51 GB (453,665,318,400 bytes)
Partition Starting Offset 206,174,868,480 bytes

Description \\.\PHYSICALDRIVE1
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 4
SCSI Logical Unit 0
SCSI Port 4
SCSI Target ID 0
Sectors/Track 63
Size 614.52 GB (659,840,186,880 bytes)
Total Cylinders 80,221
Total Sectors 1,288,750,365
Total Tracks 20,456,355
Tracks/Cylinder 255
Partition Disk #1, Partition #0
Partition Size 72.01 GB (77,317,599,744 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #1, Partition #1
Partition Size 120.01 GB (128,857,236,480 bytes)
Partition Starting Offset 77,317,632,000 bytes
Partition Disk #1, Partition #2
Partition Size 422.51 GB (453,665,318,400 bytes)
Partition Starting Offset 206,174,868,480 bytes

Description \\.\PHYSICALDRIVE6
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 4
SCSI Logical Unit 0
SCSI Port 9
SCSI Target ID 0
Sectors/Track 63
Size 614.52 GB (659,840,186,880 bytes)
Total Cylinders 80,221
Total Sectors 1,288,750,365
Total Tracks 20,456,355
Tracks/Cylinder 255
Partition Disk #6, Partition #0
Partition Size 72.01 GB (77,317,599,744 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #6, Partition #1
Partition Size 120.01 GB (128,857,236,480 bytes)
Partition Starting Offset 77,317,632,000 bytes
Partition Disk #6, Partition #2
Partition Size 422.51 GB (453,665,318,400 bytes)
Partition Starting Offset 206,174,868,480 bytes

Description \\.\PHYSICALDRIVE5
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 4
SCSI Logical Unit 0
SCSI Port 8
SCSI Target ID 0
Sectors/Track 63
Size 614.52 GB (659,840,186,880 bytes)
Total Cylinders 80,221
Total Sectors 1,288,750,365
Total Tracks 20,456,355
Tracks/Cylinder 255
Partition Disk #5, Partition #0
Partition Size 72.01 GB (77,317,599,744 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #5, Partition #1
Partition Size 120.01 GB (128,857,236,480 bytes)
Partition Starting Offset 77,317,632,000 bytes
Partition Disk #5, Partition #2
Partition Size 422.51 GB (453,665,318,400 bytes)
Partition Starting Offset 206,174,868,480 bytes

Description \\.\PHYSICALDRIVE4
Manufacturer Not Available
Model Not Available
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 3
SCSI Bus 4
SCSI Logical Unit 0
SCSI Port 7
SCSI Target ID 0
Sectors/Track 63
Size 614.52 GB (659,840,186,880 bytes)
Total Cylinders 80,221
Total Sectors 1,288,750,365
Total Tracks 20,456,355
Tracks/Cylinder 255
Partition Disk #4, Partition #0
Partition Size 72.01 GB (77,317,599,744 bytes)
Partition Starting Offset 32,256 bytes
Partition Disk #4, Partition #1
Partition Size 120.01 GB (128,857,236,480 bytes)
Partition Starting Offset 77,317,632,000 bytes
Partition Disk #4, Partition #2
Partition Size 422.51 GB (453,665,318,400 bytes)
Partition Starting Offset 206,174,868,480 bytes

Description Disk drive
Manufacturer (Standard disk drives)
Model SEAGATE ST318451LC SCSI Disk Device
Bytes/Sector 512
Media Loaded Yes
Media Type Fixed hard disk
Partitions 1
SCSI Bus 0
SCSI Logical Unit 0
SCSI Port 2
SCSI Target ID 0
Sectors/Track 63
Size 17.09 GB (18,350,599,680 bytes)
Total Cylinders 2,231
Total Sectors 35,841,015
Total Tracks 568,905
Tracks/Cylinder 255
Partition Disk #0, Partition #0
Partition Size 17.08 GB (18,342,342,144 bytes)
Partition Starting Offset 32,256 bytes

[SCSI]

Item Value
Name Adaptec AIC-7902-based Ultra320 SCSI
Manufacturer Adaptec
Status OK
PNP Device ID
PCI\VEN_9005&DEV_801F&SUBSYS_81361033&REV_03\3&13C0B0C5&0&20
I/O Port 0x00002C00-0x00002CFF
Memory Address 0xF6000000-0xF63FFFFF
I/O Port 0x00002800-0x000028FF
IRQ Channel IRQ 16
Driver c:\windows\system32\drivers\adpu320.sys (6.0.001.000 (Lab01_N(portbld).020729-2000), 101.63 KB (104,064 bytes), 11/18/2002 9:00 PM)

Name Adaptec AIC-7902-based Ultra320 SCSI
Manufacturer Adaptec

Status OK
PNP Device ID
PCI\VEN_9005&DEV_801F&SUBSYS_81361033&REV_03\3&13C0B0C5&0&21
I/O Port 0x00003400-0x000034FF
Memory Address 0xF6002000-0xF6003FFF
I/O Port 0x00003000-0x000030FF
IRQ Channel IRQ 17
Driver c:\windows\system32\drivers\adpu320.sys (6.0.001.000 (Lab01_N(portbld).020729-2000), 101.63 KB (104,064 bytes), 11/18/2002 9:00 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
Manufacturer Mylex
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&254DAD54&0&4040
Memory Address 0xF6800000-0xF6FFFFFF
I/O Port 0x00004000-0x00005FFF
Memory Address 0xF7800000-0xF87FFFFF
IRQ Channel IRQ 24
Driver c:\windows\system32\drivers\dac2w2k.sys (7.00-14 built by: WinDDK, 172.75 KB (176,896 bytes), 3/10/2003 9:09 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
Manufacturer Mylex
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&94A037D&0&4048
Memory Address 0xF7000000-0xF77FFFFF
I/O Port 0x00005000-0x00005FFF
Memory Address 0xF8000000-0xF87FFFFF
IRQ Channel IRQ 25
Driver c:\windows\system32\drivers\dac2w2k.sys (7.00-14 built by: WinDDK, 172.75 KB (176,896 bytes), 3/10/2003 9:09 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
Manufacturer Mylex
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&2C59ABA9&0&4040
Memory Address 0xF8800000-0xF99FFFFF
I/O Port 0x00006000-0x00007FFF
Memory Address 0xFA000000-0xFAFFFFFF
IRQ Channel IRQ 26
Driver c:\windows\system32\drivers\dac2w2k.sys (7.00-14 built by: WinDDK, 172.75 KB (176,896 bytes), 3/10/2003 9:09 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
Manufacturer Mylex
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&23E0528&0&4048
Memory Address 0xF9000000-0xF97FFFFF
I/O Port 0x00007000-0x00007FFF
Memory Address 0xFA800000-0xFAFFFFFF
IRQ Channel IRQ 27
Driver c:\windows\system32\drivers\dac2w2k.sys (7.00-14 built by: WinDDK, 172.75 KB (176,896 bytes), 3/10/2003 9:09 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
Manufacturer Mylex
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&12E15626&0&4040
Memory Address 0xFB000000-0xFC1FFFFF
I/O Port 0x00008000-0x00009FFF
Memory Address 0xFC800000-0xFD7FFFFF
IRQ Channel IRQ 28
Driver c:\windows\system32\drivers\dac2w2k.sys (7.00-14 built by: WinDDK, 172.75 KB (176,896 bytes), 3/10/2003 9:09 PM)

Name Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
Manufacturer Mylex
Status OK
PNP Device ID
PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&1BB65AAB&0&4048
Memory Address 0xFB800000-0xFBFFFFFF
I/O Port 0x00009000-0x00009FFF
Memory Address 0xFD000000-0xFD7FFFFF
IRQ Channel IRQ 29
Driver c:\windows\system32\drivers\dac2w2k.sys (7.00-14 built by: WinDDK, 172.75 KB (176,896 bytes), 3/10/2003 9:09 PM)

[IDE]

Item Value
Name CSB5 IDE Controller
Manufacturer ServerWorks
Status OK
PNP Device ID
PCI\VEN_1166&DEV_0212&SUBSYS_02121166&REV_93\3&267A616A&0&79
I/O Port 0x00002400-0x0000240F
Driver c:\windows\system32\drivers\pciide.sys (5.2.3718.0 (dnsrv.021114-1947), 3.50 KB (3,584 bytes), 11/18/2002 9:00 PM)

Name Primary IDE Channel
Manufacturer (Standard IDE ATA/ATAPI controllers)
Status OK
PNP Device ID PCIIDE\IDECHANNEL\4&1024D5C6&0&0
I/O Port 0x000001F0-0x000001F7
I/O Port 0x000003F6-0x000003F6
IRQ Channel IRQ 14
Driver c:\windows\system32\drivers\atapi.sys (5.2.3718.0 (dnsrv.021114-1947), 90.50 KB (92,672 bytes), 11/18/2002 9:00 PM)

Name Secondary IDE Channel
Manufacturer (Standard IDE ATA/ATAPI controllers)
Status OK
PNP Device ID PCIIDE\IDECHANNEL\4&1024D5C6&0&1
I/O Port 0x00000170-0x00000177
I/O Port 0x00000376-0x00000376
Driver c:\windows\system32\drivers\atapi.sys (5.2.3718.0 (dnsrv.021114-1947), 90.50 KB (92,672 bytes), 11/18/2002 9:00 PM)

[Printing]

Name Driver Port Name Server Name

[Problem Devices]

Device PNP Device ID Error Code
Not Available ACPI\IBM37D0\2&DABA3FF&0 The drivers for this device are not installed.

[USB]

Device PNP Device ID
ServerWorks (RCC) PCI to USB Open Host Controller
PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_05\3&267A616A&0&7A
USB Root Hub USB\ROOT_HUB\4&AF5358C&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 Microsoft Embedded Controller Driver
c:\windows\system32\drivers\acpiec.sys Kernel
Driver Yes Boot Running OK Normal
No Yes
adpu160m adpu160m Not Available Kernel Driver
No Disabled Stopped OK Normal
No No
adpu320 adpu320 c:\windows\system32\drivers\adpu320.sys
Kernel Driver Yes Boot Running
OK Normal No Yes
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
aha154x Aha154x Not Available Kernel Driver
No Disabled Stopped OK Normal
No No
aic78u2 aic78u2 Not Available Kernel Driver
No Disabled Stopped OK Normal
No No
aic78xx aic78xx Not Available Kernel Driver

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        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
ati2mpad ati2mpad c:\windows\system32\drivers\ati2mpad.sys
        Kernel Driver     Yes      Manual   Running
        OK      Ignore    No       Yes
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
cd20xrnt cd20xrnt Not Available    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
cpqarray Cpqarray Not Available    Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
cpqarry2 cpqarry2 Not Available    Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
cpqcissm cpqcissm Not Available    Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
cpqfcalm cpqfcalm Not Available    Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
crcdisk CRC Disk Filter Driver
        c:\windows\system32\drivers\crcdisk.sys   Kernel
Driver  Yes     Boot      Running  OK       Normal
        No      Yes
dac2w2k dac2w2k c:\windows\system32\drivers\dac2w2k.sys
        Kernel Driver     Yes      Boot     Running
        OK      Normal    No       Yes
dac960nt dac960nt Not Available    Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
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\e1000325.sys  Kernel
Driver  Yes     Manual    Running  OK       Normal
        No      Yes
fastfat Fastfat c:\windows\system32\drivers\fastfat.sys
        File System Driver Yes     Disabled Running
        OK      Normal    No       Yes
fdc     Floppy Disk Controller Driver
        c:\windows\system32\drivers\fdc.sys       Kernel
Driver  Yes     Manual    Running  OK       Normal
        No      Yes
fips    Fips    c:\windows\system32\drivers\fips.sys
        Kernel Driver     Yes      System   Running
        OK      Normal    No       Yes
flpydisk Floppy Disk Driver
        c:\windows\system32\drivers\flpydisk.sys  Kernel
Driver  Yes     Manual    Running  OK       Normal
        No      Yes
ftdisk  Volume Manager Driver
        c:\windows\system32\drivers\ftdisk.sys    Kernel
Driver  Yes     Boot      Running  OK       Normal
        No      Yes
gpc     Generic Packet Classifier
        c:\windows\system32\drivers\msgpc.sys     Kernel
Driver  Yes     Manual    Running  OK       Normal
        No      Yes
hpn     hpn     Not Available     Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
hpt3xx  hpt3xx  Not Available     Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
http    HTTP    c:\windows\system32\drivers\http.sys
        Kernel Driver     No       Manual   Stopped
        OK      Normal    No       No
i2omgmt i2omgmt Not Available      Kernel Driver
        No      System    Stopped  OK       Normal
        No      No
i2omp   i2omp   Not Available     Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
i8042prt i8042 Keyboard and PS/2 Mouse Port Driver
        c:\windows\system32\drivers\i8042prt.sys  Kernel
Driver  Yes     System    Running  OK       Normal
        No      Yes
iirsp   iirsp   Not Available      Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
imapi   CD-Burning Filter Driver
        c:\windows\system32\drivers\imapi.sys     Kernel
Driver  No      System    Stopped  OK       Normal
        No      No
intelide IntelIde Not Available    Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
ipfilterdriver  IP Traffic Filter Driver
        c:\windows\system32\drivers\ipfltdrv.sys  Kernel
Driver  No      Manual    Stopped  OK       Normal
        No      No
ipinip  IP in IP Tunnel Driver
        c:\windows\system32\drivers\ipinip.sys    Kernel
Driver  No      Manual    Stopped  OK       Normal
        No      No
ipnat   IP Network Address Translator
        c:\windows\system32\drivers\ipnat.sys     Kernel
Driver  No      Manual    Stopped  OK       Normal
        No      No
ipsec   IPSEC driver
        c:\windows\system32\drivers\ipsec.sys     Kernel
Driver  Yes     System    Running  OK       Normal
        No      Yes
ipsraidn ipsraidn Not Available    Kernel Driver
        No      Disabled  Stopped  OK       Normal
        No      No
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
macxp32 macxp32 c:\windows\system32\drivers\macxp32.sys
        Kernel Driver     Yes      Boot     Running
        OK      Normal    No       Yes
mnmdd   mnmdd   c:\windows\system32\drivers\mnmdd.sys
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        Kernel Driver           Yes     System  Running
        OK      Ignore  No      Yes
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  No      Manual  Stopped OK      Normal
        No      No
ndiswan Remote Access NDIS WAN Driver
        c:\windows\system32\drivers\ndiswan.sys         Kernel
Driver  Yes     Manual  Running OK      Normal
        No      Yes
ndproxy NDIS Proxy
        c:\windows\system32\drivers\ndproxy.sys         Kernel
Driver  Yes     Manual  Running OK      Normal
        No      Yes
netbios NetBIOS Interface
        c:\windows\system32\drivers\netbios.sys         File
System Driver           Yes     System  Running OK
        Normal  No      Yes
netbt   NetBios over Tcpip
        c:\windows\system32\drivers\netbt.sys           Kernel
Driver  Yes     System  Running OK      Normal
        No      Yes
nfrd960 nfrd960 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
parport Parallel port driver
        c:\windows\system32\drivers\parport.sys         Kernel
Driver  Yes     Manual  Running OK      Normal
        No      Yes
partmgr Partition Manager
        c:\windows\system32\drivers\partmgr.sys         Kernel
Driver  Yes     Boot    Running OK      Normal
        No      Yes
parvdm  Parvdm  c:\windows\system32\drivers\parvdm.sys
        Kernel Driver           Yes     Auto    Running
        OK      Ignore  No      Yes
pci     PCI Bus Driver
        c:\windows\system32\drivers\pci.sys             Kernel
Driver  Yes     Boot    Running OK      Critical
        No      Yes
pciide  PCIIde  c:\windows\system32\drivers\pciide.sys
        Kernel Driver           Yes     Boot    Running
        OK      Normal  No      Yes
pcmcia  Pcmcia  c:\windows\system32\drivers\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
perc2   perc2   Not Available           Kernel Driver
        No      Disabled        Stopped OK      Normal
        No      No
perc2hib        perc2hib        Not Available           Kernel Driver
        No      Disabled        Stopped OK      Normal
        No      No
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
        No      No
ql2100  ql2100  Not Available           Kernel Driver
        No      Disabled        Stopped OK      Normal
        No      No
ql2200  ql2200  Not Available           Kernel Driver
        No      Disabled        Stopped OK      Normal
        No      No
ql2300  ql2300  Not Available           Kernel Driver
        No      Disabled        Stopped OK      Normal
        No      No
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           No      Manual  Stopped
        OK      Ignore  No      No
redbook Digital CD Audio Playback Filter Driver
        c:\windows\system32\drivers\redbook.sys         Kernel
Driver  Yes     System  Running OK      Normal
        No      Yes
secdrv  Secdrv  c:\windows\system32\drivers\secdrv.sys
        Kernel Driver           No      Manual  Stopped
        OK      Normal  No      No
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
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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
sparrow         Sparrow     Not Available           Kernel Driver
                No          Disabled    Stopped     OK          Normal
                No          No
srv             Srv         c:\windows\system32\drivers\srv.sys
                File System Driver      No          Manual      Stopped
                OK          Normal      No          No
swenum          Software Bus Driver
                c:\windows\system32\drivers\swenum.sys          Kernel
Driver          Yes         Manual      Running     OK          Normal
                No          Yes
symc810         symc810     Not Available           Kernel Driver
                No          Disabled    Stopped     OK          Normal
                No          No
symc8xx         symc8xx     Not Available           Kernel Driver
                No          Disabled    Stopped     OK          Normal
                No          No
symmpi          symmpi      Not Available           Kernel Driver
                No          Disabled    Stopped     OK          Normal
                No          No
sym_hi          sym_hi      Not Available           Kernel Driver
                No          Disabled    Stopped     OK          Normal
                No          No
sym_u3          sym_u3      Not Available           Kernel Driver
                No          Disabled    Stopped     OK          Normal
                No          No
tcpip           TCP/IP Protocol Driver
                c:\windows\system32\drivers\tcpip.sys           Kernel
Driver          Yes         System      Running     OK          Normal
                No          Yes
tdpipe          TDPIPE      c:\windows\system32\drivers\tdpipe.sys
                Kernel Driver           No          Manual      Stopped
                OK          Ignore      No          No
tdtcp           TDTCP       c:\windows\system32\drivers\tdtcp.sys
                Kernel Driver           No          Manual      Stopped
                OK          Ignore      No          No
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
ultra           ultra       Not Available           Kernel Driver
                No          Disabled    Stopped     OK          Normal
                No          No
update          Microcode Update Driver
                c:\windows\system32\drivers\update.sys          Kernel
Driver          Yes         Manual      Running     OK          Normal
                No          Yes
usbhub          USB2 Enabled Hub
                c:\windows\system32\drivers\usbhub.sys          Kernel
Driver          Yes         Manual      Running     OK          Normal
                No          Yes
usbohci         Microsoft USB Open Host Controller Miniport Driver
                c:\windows\system32\drivers\usbohci.sys         Kernel
Driver          Yes         Manual      Running     OK          Normal
                No          Yes
vgasave         VGA Display Controller.
                c:\windows\system32\drivers\vga.sys             Kernel
Driver          Yes         System      Running     OK          Ignore
                No          Yes
viaide          ViaIde      Not Available           Kernel Driver
                No          Disabled    Stopped     OK          Normal
                No          No
volsnap         Storage volumes
                c:\windows\system32\drivers\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 Multiprocessor PC              No          COMPUTER
                5.2.3718.0  10/1/2002   (Standard computers)    hal.inf
                Not Available           ROOT\ACPI_HAL\0000
Microsoft ACPI-Compliant System     No          SYSTEM      5.2.3718.0
                10/1/2002   Microsoft   acpi.inf    Not Available
                ACPI_HAL\PNP0C08\0
Processor       No          PROCESSOR               5.2.3718.0  10/1/2002
                (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_0
Processor       No          PROCESSOR               5.2.3718.0  10/1/2002
                (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_1
Processor       No          PROCESSOR               5.2.3718.0  10/1/2002
                (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_2
Processor       No          PROCESSOR               5.2.3718.0  10/1/2002
                (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_3
Processor       No          PROCESSOR               5.2.3718.0  10/1/2002
                (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_4
Processor       No          PROCESSOR               5.2.3718.0  10/1/2002
                (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_5
Processor       No          PROCESSOR               5.2.3718.0  10/1/2002
                (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_6
Processor       No          PROCESSOR               5.2.3718.0  10/1/2002
                (Standard processor types)          cpu.inf     Not
Available   ACPI\GENUINEINTEL_-
_X86_FAMILY_15_MODEL_2\_7
ACPI Sleep Button       No          SYSTEM      5.2.3718.0  10/1/2002
                (Standard system devices)       machine.inf
                Not Available       ACPI\PNP0C0E\2&DABA3FF&0
PCI bus         No          SYSTEM      5.2.3718.0  10/1/2002   (Standard
system devices)         machine.inf             Not Available
                ACPI\PNP0A03\0
ServerWorks Grand Champion CMIC_HE - NorthBridge High End
                No          SYSTEM      5.2.3718.0  10/1/2002
                ServerWorks (RCC)       machine.inf             Not
Available
                PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_
22\3&267A616A&0&00
ServerWorks Grand Champion CMIC_HE - NorthBridge High End
                No          SYSTEM      5.2.3718.0  10/1/2002
                ServerWorks (RCC)       machine.inf             Not
Available
                PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_
00\3&267A616A&0&01
ServerWorks Grand Champion CMIC_HE - NorthBridge High End
                No          SYSTEM      5.2.3718.0  10/1/2002
                ServerWorks (RCC)       machine.inf             Not
Available
                PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_
00\3&267A616A&0&02
ServerWorks Grand Champion CMIC_HE - NorthBridge High End
                No          SYSTEM      5.2.3718.0  10/1/2002
                ServerWorks (RCC)       machine.inf             Not
Available
                PCI\VEN_1166&DEV_0011&SUBSYS_00000000&REV_
00\3&267A616A&0&03
RAGE XL PCI Family (Microsoft Corporation)  No          DISPLAY
                5.10.2600.6013  7/21/2001   ATI Technologies Inc.
                atiixpad.inf Not Available
                PCI\VEN_1002&DEV_4752&SUBSYS_81361033&REV_
27\3&267A616A&0&10
Plug and Play Monitor   No          MONITOR     5.1.2001.0  6/6/2001
                (Standard monitor types)        monitor.inf Not
Available   DISPLAY\SNY1E50\4&2DE08C3&0&80000001&00&02
ServerWorks Champion CSB5 - SouthBridge 5           No
                SYSTEM      5.2.3718.0  10/1/2002   ServerWorks (RCC)
                machine.inf             Not Available
                PCI\VEN_1166&DEV_0201&SUBSYS_00000000&REV_
93\3&267A616A&0&78
Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
                No          KEYBOARD    5.2.3718.0  10/1/2002
                (Standard keyboards)    keyboard.inf            Not
Available   ACPI\PNP0303\4&35118DFF&0
PS/2 Compatible Mouse   No          MOUSE       5.2.3718.0
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10/1/2002 Microsoft msmouse.inf Not Available ACPI\PNP0F13\4&35118DFF&0
System CMOS/real time clock No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0B00\4&35118DFF&0
Direct memory access controller No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0200\4&35118DFF&0
Programmable interrupt controller No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0000\4&35118DFF&0
System timer No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0100\4&35118DFF&0
Numeric data processor No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0C04\4&35118DFF&0
System speaker No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0800\4&35118DFF&0
Motherboard resources No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0C02\1
Motherboard resources No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0C02\2
Communications Port No PORTS 5.2.3718.0 10/1/2002 (Standard port types) msports.inf Not Available ACPI\PNP0501\1
Communications Port No PORTS 5.2.3718.0 10/1/2002 (Standard port types) msports.inf Not Available ACPI\PNP0501\2
ECP Printer Port No PORTS 5.2.3718.0 10/1/2002 (Standard port types) msports.inf Not Available ACPI\PNP0401\4&35118DFF&0
Printer Port Logical Interface No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available LPTENUM\MICROSOFTRAWPORT\5&953C7BB&0&LPT1
Standard floppy disk controller No FDC 5.2.3718.0 10/1/2002 (Standard floppy disk controllers) fdc.inf Not Available ACPI\PNP0700\4&35118DFF&0
Floppy disk drive No FLOPPYDISK 5.2.3718.0 10/1/2002 (Standard floppy disk drives) flpydisk.inf Not Available FDC\GENERIC_FLOPPY_DRIVE\5&28649E28&0&0
Microsoft ACPI-Compliant Embedded Controller No SYSTEM 5.2.3718.0 10/1/2002 Microsoft acpi.inf Not Available ACPI\PNP0C09\4&35118DFF&0
CSB5 IDE Controller No HDC 5.2.3718.0 10/1/2002 ServerWorks mshdc.inf Not Available PCI\VEN_1166&DEV_0212&SUBSYS_02121166&REV_93\3&267A616A&0&79
Primary IDE Channel No HDC 5.2.3718.0 10/1/2002 (Standard IDE ATA/ATAPI controllers) mshdc.inf Not Available PCIIDE\IDECHANNEL\4&1024D5C6&0&0
CD-ROM Drive No CDROM 5.2.3718.0 10/1/2002 (Standard CD-ROM drives) cdrom.inf Not Available IDE\CDROMMATSHITA_CD-ROM_CR-594_____YS1S____\5&FB0C83D&0&0.0.0
Secondary IDE Channel No HDC 5.2.3718.0 10/1/2002 (Standard IDE ATA/ATAPI controllers) mshdc.inf Not Available PCIIDE\IDECHANNEL\4&1024D5C6&0&1
ServerWorks (RCC) PCI to USB Open Host Controller No USB 5.2.3718.0 10/1/2002 ServerWorks (RCC) usbport.inf Not Available PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_05\3&267A616A&0&7A
USB Root Hub No USB 5.2.3718.0 10/1/2002 (Standard USB Host Controller) usbport.inf Not Available USB\ROOT_HUB\4&AF5358C&0
Serverworks Champion CSB5 - SouthBridge 5 LPC No SYSTEM 5.2.3718.0 10/1/2002 ServerWorks (RCC) machine.inf Not Available PCI\VEN_1166&DEV_0225&SUBSYS_00000000&REV_00\3&267A616A&0&7B
ISAPNP Read Data Port No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ISAPNP\READDATAPORT\0
ServerWorks Grand Champion CIOB_X - I/O Bridge 100 Mhz No SYSTEM 5.2.3718.0 10/1/2002 ServerWorks (RCC) machine.inf Not Available PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&267A616A&0&80
ServerWorks Grand Champion CIOB_X - I/O Bridge 100 Mhz No SYSTEM 5.2.3718.0 10/1/2002 ServerWorks (RCC) machine.inf Not Available PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&267A616A&0&82
ServerWorks Grand Champion CIOB_X - I/O Bridge 100 Mhz No SYSTEM 5.2.3718.0 10/1/2002 ServerWorks (RCC) machine.inf Not Available PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&267A616A&0&88
ServerWorks Grand Champion CIOB_X - I/O Bridge 100 Mhz No SYSTEM 5.2.3718.0 10/1/2002 ServerWorks (RCC) machine.inf Not Available PCI\VEN_1166&DEV_0010&SUBSYS_00000000&REV_03\3&267A616A&0&8A
PCI bus No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\1
Intel (R) 82544GC based network connection No NET 6.3.6.3 10/1/2002 Intel nete1000.inf Not Available PCI\VEN_8086&DEV_100D&SUBSYS_81361033&REV_02\3&13C0B0C5&0&18
Adaptec AIC-7902-based Ultra320 SCSI No SCSIADAPTER 5.2.3718.0 10/1/2002 Adaptec pnpscsi.inf Not Available PCI\VEN_9005&DEV_801F&SUBSYS_81361033&REV_03\3&13C0B0C5&0&20
Disk drive No DISKDRIVE 5.2.3718.0 10/1/2002 (Standard disk drives) disk.inf Not Available SCSI\DISK&VEN_SEAGATE&PROD_ST318451LC&REV_0003\4&61B9318&0&000
SCA Hotswap Backplane No SYSTEM 5.2.3718.0 10/1/2002 ESG-SHV scsidev.inf Not Available SCSI\PROCESSOR&VEN_ESG-SHV&PROD_SCA_HSBP_M15&REV_0.07\4&61B9318&0&060
Adaptec AIC-7902-based Ultra320 SCSI No SCSIADAPTER 5.2.3718.0 10/1/2002 Adaptec pnpscsi.inf Not Available PCI\VEN_9005&DEV_801F&SUBSYS_81361033&REV_03\3&13C0B0C5&0&21
PCI bus No SYSTEM 5.2.3718.0 10/1/2002 (Standard system devices) machine.inf Not Available ACPI\PNP0A03\2
DEC 21154 PCI to PCI bridge No SYSTEM 5.2.3718.0 10/1/2002 DEC machine.inf Not Available PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_05\3&1070020&0&40
Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated) No SCSIADAPTER 7.0.14.0 9/9/2002 Mylex oem0.inf Not Available PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&254DAD54&0&4040
NEC GEM SCSI Processor Device No SYSTEM 5.2.3718.0 10/1/2002 NEC scsidev.inf Not Available SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV_1.06\5&2D708BC0&0&0E0
NEC GEM SCSI Processor Device No SYSTEM 5.2.3718.0 10/1/2002 NEC scsidev.inf Not Available SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV_1.06\5&2D708BC0&0&1E0
NEC GEM SCSI Processor Device No SYSTEM 5.2.3718.0 10/1/2002 NEC scsidev.inf Not Available SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV_1.06\5&2D708BC0&0&2E0
Mylex RAID Disk Device No DISKDRIVE 5.2.3718.0 10/1/2002 Mylex disk.inf Not Available SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_2000&REV_0600\5&2D708BC0&0&400
Mylex GAM Device No SYSTEM 5.2.3718.0 10/1/2002 Mylex scsidev.inf Not Available SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVICE&REV_\5&2D708BC0&0&660
DEC 21154 PCI to PCI bridge No SYSTEM 5.2.3718.0 10/1/2002 DEC machine.inf Not Available PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_05\3&1070020&0&48
Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated) No SCSIADAPTER 7.0.14.0 9/9/2002 Mylex oem0.inf Not Available PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_00\4&94A037D&0&4048
NEC GEM SCSI Processor Device No SYSTEM 5.2.3718.0 10/1/2002 NEC scsidev.inf Not Available SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV_1.06\5&2CB960EC&0&0E0
NEC GEM SCSI Processor Device No SYSTEM 5.2.3718.0 10/1/2002 NEC scsidev.inf Not

```
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&2CB960EC&0&1E0
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&2CB960EC&0&2E0
Mylex RAID Disk Device          No          DISKDRIVE
        5.2.3718.0 10/1/2002 Mylex      disk.inf    Not
Available
        SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_200
0&REV_0600\5&2CB960EC&0&400
Mylex GAM Device    No          SYSTEM  5.2.3718.0 10/1/2002
        Mylex       scsidev.inf Not Available
        SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVIC
E&REV_\5&2CB960EC&0&660
PCI bus     No          SYSTEM  5.2.3718.0 10/1/2002 (Standard
system devices)         machine.inf         Not Available
        ACPI\PNP0A03\3
DEC 21154 PCI to PCI bridge     No          SYSTEM  5.2.3718.0
        10/1/2002 DEC       machine.inf         Not
Available
        PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_
05\3&29E81982&0&40
Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
        No          SCSIADAPTER     7.0.14.0    9/9/2002
        Mylex       oem0.inf    Not Available
        PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_
00\4&2C59ABA9&0&4040
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&DD1A660&0&0E0
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&DD1A660&0&1E0
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&DD1A660&0&2E0
Mylex RAID Disk Device          No          DISKDRIVE
        5.2.3718.0 10/1/2002 Mylex      disk.inf    Not
Available
        SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_200
0&REV_0600\5&DD1A660&0&400
Mylex GAM Device    No          SYSTEM  5.2.3718.0 10/1/2002
        Mylex       scsidev.inf Not Available
        SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVIC
E&REV_\5&DD1A660&0&660
DEC 21154 PCI to PCI bridge     No          SYSTEM  5.2.3718.0
        10/1/2002 DEC       machine.inf         Not
Available
        PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_
05\3&29E81982&0&48
Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
        No          SCSIADAPTER     7.0.14.0    9/9/2002
        Mylex       oem0.inf    Not Available
        PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_
00\4&23E0528&0&4048
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&5DDFD0&0&0E0
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&5DDFD0&0&1E0
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&5DDFD0&0&2E0
Mylex RAID Disk Device          No          DISKDRIVE
        5.2.3718.0 10/1/2002 Mylex      disk.inf    Not
Available
        SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_200
0&REV_0600\5&5DDFD0&0&400
Mylex GAM Device    No          SYSTEM  5.2.3718.0 10/1/2002
        Mylex       scsidev.inf Not Available
        SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVIC
E&REV_\5&5DDFD0&0&660
PCI bus     No          SYSTEM  5.2.3718.0 10/1/2002 (Standard
system devices)         machine.inf         Not Available
        ACPI\PNP0A03\4
DEC 21154 PCI to PCI bridge     No          SYSTEM  5.2.3718.0
        10/1/2002 DEC       machine.inf         Not
Available
        PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_
05\3&172E68DD&0&40
Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
        No          SCSIADAPTER     7.0.14.0    9/9/2002
        Mylex       oem0.inf    Not Available
        PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_
00\4&12E15626&0&4040
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&E99DB85&0&0E0
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&E99DB85&0&1E0
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&E99DB85&0&2E0
Mylex RAID Disk Device          No          DISKDRIVE
        5.2.3718.0 10/1/2002 Mylex      disk.inf    Not
Available
        SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_200
0&REV_0600\5&E99DB85&0&400
Mylex GAM Device    No          SYSTEM  5.2.3718.0 10/1/2002
        Mylex       scsidev.inf Not Available
        SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVIC
E&REV_\5&E99DB85&0&660
DEC 21154 PCI to PCI bridge     No          SYSTEM  5.2.3718.0
        10/1/2002 DEC       machine.inf         Not
Available
        PCI\VEN_1011&DEV_0026&SUBSYS_00000000&REV_
05\3&172E68DD&0&48
Mylex eXtremeRAID 2000 Disk Array Controller (Accelerated)
        No          SCSIADAPTER     7.0.14.0    9/9/2002
        Mylex       oem0.inf    Not Available
        PCI\VEN_1069&DEV_BA56&SUBSYS_00401069&REV_
00\4&1BB65AAB&0&4048
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&2C06D47D&0&0E0
NEC GEM SCSI Processor Device           No          SYSTEM
        5.2.3718.0 10/1/2002 NEC        scsidev.inf Not
Available
        SCSI\PROCESSOR&VEN_NEC&PROD_GEM359&REV
_1.06\5&2C06D47D&0&1E0
Mylex RAID Disk Device          No          DISKDRIVE
        5.2.3718.0 10/1/2002 Mylex      disk.inf    Not
Available
        SCSI\DISK&VEN_MYLEX&PROD_EXTREMERAID_200
0&REV_0600\5&2C06D47D&0&400
Mylex GAM Device    No          SYSTEM  5.2.3718.0 10/1/2002
        Mylex       scsidev.inf Not Available
        SCSI\PROCESSOR&VEN_MYLEX&PROD_GAM_DEVIC
E&REV_\5&2C06D47D&0&660
Motherboard resources           No          SYSTEM  5.2.3718.0
        10/1/2002 (Standard system devices)     machine.inf
        Not Available       ACPI\PNP0C02\60
Not Available   Not Available   Not Available
        Not Available   Not Available   Not
Available   Not Available   Not Available
        ACPI\IBM37D0\2&DABA3FF&0
ACPI Fixed Feature Button       No          SYSTEM  5.2.3718.0
        10/1/2002 (Standard system devices)     machine.inf
        Not Available
        ACPI\FIXEDBUTTON\2&DABA3FF&0
Logical Disk Manager    No          SYSTEM  5.2.3718.0 10/1/2002
        (Standard system devices)   machine.inf
        Not Available       ROOT\DMIO\0000
Volume Manager      No          SYSTEM  5.2.3718.0 10/1/2002
        (Standard system devices)   machine.inf
        Not Available       ROOT\FTDISK\0000
Generic volume      No          VOLUME  5.2.3718.0 10/1/2002
        Microsoft   volume.inf  Not Available
        STORAGE\VOLUME\1&30A96598&0&SIGNATUREF269
A63BOFFSET7E00LENGTH44549EE00
Generic volume      No          VOLUME  5.2.3718.0 10/1/2002
        Microsoft   volume.inf  Not Available
        STORAGE\VOLUME\1&30A96598&0&SIGNATURE2F2A
C286OFFSET7E00LENGTH12007CF200
Generic volume      No          VOLUME  5.2.3718.0 10/1/2002
        Microsoft   volume.inf  Not Available
        STORAGE\VOLUME\1&30A96598&0&SIGNATURE2F2A
C286OFFSET12007D7000LENGTH1E007D6400
Generic volume      No          VOLUME  5.2.3718.0 10/1/2002
        Microsoft   volume.inf  Not Available
        STORAGE\VOLUME\1&30A96598&0&SIGNATURE2F2A
```

C286OFFSET3000FAD400LENGTH69A08F6600
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATURE5575
0F47OFFSET7E00LENGTH12007CF200
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATURE5575
0F47OFFSET12007D7000LENGTH1E007D6400
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATURE5575
0F47OFFSET3000FAD400LENGTH69A08F6600
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATURE7435
F0CEOFFSET7E00LENGTH12007CF200
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATURE7435
F0CEOFFSET12007D7000LENGTH1E007D6400
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATURE7435
F0CEOFFSET3000FAD400LENGTH69A08F6600
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATUREE12F
688AOFFSET7E00LENGTH12007CF200
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATUREE12F
688AOFFSET12007D7000LENGTH1E007D6400
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATUREE12F
688AOFFSET3000FAD400LENGTH69A08F6600
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATUREE12F
688COFFSET7E00LENGTH12007CF200
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATUREE12F
688COFFSET12007D7000LENGTH1E007D6400
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATUREE12F
688COFFSET3000FAD400LENGTH69A08F6600
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATURE78BE
6D46OFFSET7E00LENGTH18FFEA7E00
Generic volume No VOLUME 5.2.3718.0 10/1/2002
Microsoft volume.inf Not Available
STORAGE\VOLUME\1&30A96598&0&SIGNATURE78BE
6D46OFFSET18FFEAFC00LENGTH4DF3BE000
AFD Networking Support Environment Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_AFD\0000
Beep Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available ROOT\LEGACY_BEEP\0000
CRC Disk Filter Driver Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_CRCDISK\0000
dmboot Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_DMBOOT\0000
dmload Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_DMLOAD\0000
Fips Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_FIPS\0000
Generic Packet Classifier Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_GPC\0000
IPSEC driver Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_IPSEC\0000
ksecdd Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_KSECDD\0000
macxp32 Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_MACXP32\0000
mnmdd Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_MNMDD\0000
mountmgr Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available
ROOT\LEGACY_MOUNTMGR\0000
NDIS System Driver Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_NDIS\0000
Remote Access NDIS TAPI Driver Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_NDISTAPI\0000
NDIS Usermode I/O Protocol Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_NDISUIO\0000
NDProxy Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_NDPROXY\0000
NetBios over Tcpip Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_NETBT\0000
Null Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_NULL\0000
Partition Manager Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_PARTMGR\0000
Parvdm Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_PARVDM\0000
Remote Access Auto Connection Driver Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_RASACD\0000
RDPCDD Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_RDPCDD\0000
TCP/IP Protocol Driver Not Available LEGACYDRIVER
Not Available Not Available Not
Available Not Available Not Available
ROOT\LEGACY_TCPIP\0000
VGA Display Controller. Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_VGASAVE\0000
volsnap Not Available LEGACYDRIVER Not
Available Not Available Not Available Not
Available Not Available ROOT\LEGACY_VOLSNAP\0000
Remote Access IP ARP Driver Not Available
LEGACYDRIVER Not Available Not
Available Not Available Not Available Not
Available ROOT\LEGACY_WANARP\0000
Audio Codecs No MEDIA 5.2.3718.0 10/1/2002
(Standard system devices) wave.inf Not
Available ROOT\MEDIA\MS_MMACM
Legacy Audio Drivers No MEDIA 5.2.3718.0 10/1/2002
(Standard system devices) wave.inf Not
Available ROOT\MEDIA\MS_MMDRV
Media Control Devices No MEDIA 5.2.3718.0 10/1/2002
(Standard system devices) wave.inf Not
Available ROOT\MEDIA\MS_MMMCI
Legacy Video Capture Devices No MEDIA 5.2.3718.0
10/1/2002 (Standard system devices) wave.inf
Not Available ROOT\MEDIA\MS_MMVCD
Video Codecs No MEDIA 5.2.3718.0 10/1/2002
(Standard system devices) wave.inf Not
Available ROOT\MEDIA\MS_MMVID
WAN Miniport (L2TP) No NET 5.2.3718.0 10/1/2002
Microsoft netrasa.inf Not Available
ROOT\MS_L2TPMINIPORT\0000
WAN Miniport (IP) No NET 5.2.3718.0 10/1/2002
Microsoft netrasa.inf Not Available
ROOT\MS_NDISWANIP\0000
WAN Miniport (PPPOE) No NET 5.2.3718.0
10/1/2002 Microsoft netrasa.inf Not Available
ROOT\MS_PPPOEMINIPORT\0000
WAN Miniport (PPTP) No NET 5.2.3718.0 10/1/2002
Microsoft netrasa.inf Not Available
ROOT\MS_PPTPMINIPORT\0000
Direct Parallel No NET 5.2.3718.0 10/1/2002
Microsoft netrasa.inf Not Available
ROOT\MS_PTIMINIPORT\0000
Terminal Server Device Redirector No SYSTEM 5.2.3718.0
10/1/2002 (Standard system devices) machine.inf
Not Available ROOT\RDPDR\0000
Terminal Server Keyboard Driver No SYSTEM 5.2.3718.0
10/1/2002 (Standard system devices) machine.inf
Not Available ROOT\RDP_KBD\0000
Terminal Server Mouse Driver No SYSTEM 5.2.3718.0

10/1/2002 (Standard system devices) machine.inf
Not Available ROOT\RDP_MOU\0000
Plug and Play Software Device Enumerator No SYSTEM
5.2.3718.0 10/1/2002 (Standard system devices)
machine.inf Not Available
ROOT\SYSTEM\0000
Microcode Update Device No SYSTEM 5.2.3718.0
10/1/2002 (Standard system devices) machine.inf
Not Available ROOT\SYSTEM\0001

[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 <SYSTEM>
windir %SystemRoot% <SYSTEM>
OS Windows_NT <SYSTEM>
PROCESSOR_ARCHITECTURE x86 <SYSTEM>
PROCESSOR_LEVEL 15 <SYSTEM>
PROCESSOR_IDENTIFIER x86 Family 15 Model 2 Stepping 2,
GenuineIntel <SYSTEM>
PROCESSOR_REVISION 0202 <SYSTEM>
NUMBER_OF_PROCESSORS 8 <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
SHASTA\Administrator
TMP %USERPROFILE%\Local Settings\Temp
SHASTA\Administrator

[Print Jobs]

Document Size Owner Notify Status Time
Submitted Start Time Until Time Elapsed Time Pages
Printed Job ID Priority Parameters Driver
Print Processor Host Print Queue Data Type
Name

[Network Connections]

Local Name Remote Name Type Status
User Name
Z: \\cl02\c$ Disk Current Connection
SHASTA\Administrator

[Running Tasks]

Name Path Process ID Priority Min Working Set
Max Working Set Start Time Version Size
File Date
system idle process Not Available 0 0
Not Available Not Available Not
Available Not Available Not Available Not
Available
system Not Available 4 8 0
1413120 Not Available Not Available
Not Available Not Available
smss.exe c:\windows\system32\smss.exe 448 11
204800 1413120 3/20/2003 2:04 PM 5.2.3718.0
(dnsrv.021114-1947) 46.50 KB (47,616 bytes) 11/18/2002
9:00 PM
csrss.exe Not Available 504 13 Not
Available Not Available 3/20/2003 2:04 PM Not
Available Not Available Not Available
winlogon.exe c:\windows\system32\winlogon.exe
532 13 204800 1413120 3/20/2003
2:04 PM 5.2.3718.0 (dnsrv.021114-1947) 524.00 KB (536,576
bytes) 11/18/2002 9:00 PM
services.exe c:\windows\system32\services.exe 576
9 204800 1413120 3/20/2003 2:04 PM
5.2.3718.0 (dnsrv.021114-1947) 99.50 KB (101,888
bytes) 11/18/2002 9:00 PM
lsass.exe c:\windows\system32\lsass.exe 588 9
204800 1413120 3/20/2003 2:04 PM 5.2.3718.0
(dnsrv.021114-1947) 13.00 KB (13,312 bytes) 11/18/2002
9:00 PM
svchost.exe c:\windows\system32\svchost.exe 796
8 204800 1413120 3/20/2003 2:04 PM
5.2.3718.0 (dnsrv.021114-1947) 12.00 KB (12,288
bytes) 11/18/2002 9:00 PM
svchost.exe c:\windows\system32\svchost.exe 836
8 204800 1413120 3/20/2003 2:04 PM
5.2.3718.0 (dnsrv.021114-1947) 12.00 KB (12,288
bytes) 11/18/2002 9:00 PM
explorer.exe c:\windows\explorer.exe 1072
8 204800 1413120 3/20/2003 2:04 PM
6.00.3718.0 (dnsrv.021114-1947) 995.50 KB (1,019,392
bytes) 11/18/2002 9:00 PM
cmd.exe c:\windows\system32\cmd.exe 1232 8
204800 1413120 3/20/2003 2:04 PM 5.2.3718.0
(dnsrv.021114-1947) 370.00 KB (378,880 bytes) 11/18/2002
9:00 PM
cmd.exe c:\windows\system32\cmd.exe 1280 8
204800 1413120 3/20/2003 2:04 PM 5.2.3718.0
(dnsrv.021114-1947) 370.00 KB (378,880 bytes) 11/18/2002
9:00 PM
wmiprvse.exe Not Available 1596 8
Not Available Not Available 3/20/2003
2:04 PM Not Available Not Available Not
Available
wpabaln.exe c:\windows\system32\wpabaln.exe 148
8 204800 1413120 3/23/2003 2:06 PM
5.2.3718.0 (dnsrv.021114-1947) 31.00 KB (31,744
bytes) 11/18/2002 9:00 PM
sqlservr.exe c:\program files\microsoft sql
server\mssql\binn\sqlservr.exe 1348 13 204800
1413120 3/24/2003 6:11 PM 2000.080.0760.00
7.17 MB (7,520,337 bytes) 3/10/2003 8:59 PM
mmc.exe c:\windows\system32\mmc.exe 1340 8
204800 1413120 3/25/2003 1:42 PM 5.2.3718.0
(dnsrv.021114-1947) 762.00 KB (780,288 bytes) 11/18/2002
9:00 PM
helpctr.exe c:\windows\pchealth\helpctr\binaries\helpctr.exe
268 8 204800 1413120 3/25/2003
1:43 PM 5.2.3718.0 (dnsrv.021114-1947) 734.50 KB (752,128
bytes) 3/10/2003 7:25 PM
helpsvc.exe
c:\windows\pchealth\helpctr\binaries\helpsvc.exe
1064 8 204800 1413120 3/25/2003
1:43 PM 5.2.3718.0 (dnsrv.021114-1947) 686.50 KB (702,976
bytes) 3/10/2003 7:25 PM
wmiprvse.exe Not Available 368 8
Not Available Not Available 3/25/2003
1:43 PM Not Available Not Available Not
Available

[Loaded Modules]

Name Version Size File Date Manufacturer
Path
smss 5.2.3718.0 (dnsrv.021114-1947) 46.50 KB (47,616
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\smss.exe
ntdll 5.2.3718.0 (dnsrv.021114-1947) 708.00 KB (724,992
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\ntdll.dll
winlogon 5.2.3718.0 (dnsrv.021114-1947) 524.00 KB (536,576
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\winlogon.exe
kernel32 5.2.3718.0 (dnsrv.021114-1947) 949.00 KB (971,776
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\kernel32.dll
msvcrt 7.0.3718.0 (dnsrv.021114-1947) 319.50 KB (327,168
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\msvcrt.dll
advapi32 5.2.3718.0 (dnsrv.021114-1947) 534.00 KB (546,816
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\advapi32.dll
rpcrt4 5.2.3718.0 (dnsrv.021114-1947) 540.00 KB (552,960
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\rpcrt4.dll
user32 5.2.3718.0 (dnsrv.021114-1947) 552.50 KB (565,760
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\user32.dll
gdi32 5.2.3718.0 (dnsrv.021114-1947) 255.00 KB (261,120
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\gdi32.dll
userenv 5.2.3718.0 (dnsrv.021114-1947) 726.50 KB (743,936
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\userenv.dll
nddeapi 5.2.3718.0 (dnsrv.021114-1947) 15.50 KB (15,872
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\nddeapi.dll
crypt32 5.131.3718.0 (dnsrv.021114-1947) 534.50 KB
(547,328 bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\crypt32.dll
msasn1 5.2.3718.0 (dnsrv.021114-1947) 50.50 KB (51,712
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\msasn1.dll
secur32 5.2.3718.0 (dnsrv.021114-1947) 56.00 KB (57,344
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\secur32.dll
winsta 5.2.3718.0 (dnsrv.021114-1947) 48.50 KB (49,664
bytes) 11/18/2002 9:00 PM Microsoft Corporation
c:\windows\system32\winsta.dll

netapi32 5.2.3718.0 (dnsrv.021114-1947) 311.50 KB (318,976 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\netapi32.dll
profmap 5.2.3718.0 (dnsrv.021114-1947) 21.50 KB (22,016 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\profmap.dll
regapi 5.2.3718.0 (dnsrv.021114-1947) 47.50 KB (48,640 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\regapi.dll
ws2_32 5.2.3718.0 (dnsrv.021114-1947) 75.00 KB (76,800 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\ws2_32.dll
ws2help 5.2.3718.0 (dnsrv.021114-1947) 19.00 KB (19,456 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\ws2help.dll
psapi 5.2.3718.0 (dnsrv.021114-1947) 21.00 KB (21,504 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\psapi.dll
version 5.2.3718.0 (dnsrv.021114-1947) 16.50 KB (16,896 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\version.dll
setupapi 5.2.3718.0 (dnsrv.021114-1947) 999.00 KB (1,022,976 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\setupapi.dll
msgina 5.2.3718.0 (dnsrv.021114-1947) 1.13 MB (1,186,304 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msgina.dll
shsvcs 6.00.3718.0 (dnsrv.021114-1947) 121.50 KB (124,416 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\shsvcs.dll
shlwapi 6.00.3718.0 (dnsrv.021114-1947) 272.00 KB (278,528 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\shlwapi.dll
sfc 5.2.3718.0 (dnsrv.021114-1947) 4.50 KB (4,608 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\sfc.dll
sfc_os 5.2.3718.0 (dnsrv.021114-1947) 133.00 KB (136,192 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\sfc_os.dll
wintrust 5.131.3718.0 (dnsrv.021114-1947) 159.50 KB (163,328 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wintrust.dll
ole32 5.2.3718.0 (dnsrv.021114-1947) 1.09 MB (1,139,200 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\ole32.dll
imagehlp 5.2.3718.0 (dnsrv.021114-1947) 136.50 KB (139,776 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\imagehlp.dll
comctl32 6.0 (dnsrv.021114-1947) 907.00 KB (928,768 bytes) 3/11/2003 4:11 AM Microsoft Corporation c:\windows\winsxs\x86_microsoft.windows.common-controls_6595b64144ccf1df_6.0.100.0_x-ww_8417450b\comctl32.dll
winscard 5.2.3718.0 (dnsrv.021114-1947) 94.00 KB (96,256 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\winscard.dll
wtsapi32 5.2.3718.0 (dnsrv.021114-1947) 17.00 KB (17,408 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wtsapi32.dll
sxs 5.2.3718.0 (dnsrv.021114-1947) 714.00 KB (731,136 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\sxs.dll
rsaenh 5.2.3718.0 (dnsrv.021114-1947) 177.07 KB (181,320 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\rsaenh.dll
wldap32 5.2.3718.0 (dnsrv.021114-1947) 137.00 KB (140,288 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wldap32.dll
cscdll 5.2.3718.0 (dnsrv.021114-1947) 93.50 KB (95,744 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\cscdll.dll
wlnotify 5.2.3718.0 (dnsrv.021114-1947) 86.00 KB (88,064 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wlnotify.dll
winmm 5.2.3718.0 (dnsrv.021114-1947) 162.50 KB (166,400 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\winmm.dll
winspool 5.2.3718.0 (dnsrv.021114-1947) 135.00 KB (138,240 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\winspool.drv
mpr 5.2.3718.0 (dnsrv.021114-1947) 55.00 KB (56,320 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mpr.dll
shell32 6.00.3718.0 (dnsrv.021114-1947) 7.77 MB (8,152,064 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\shell32.dll
comctl32 5.82 (dnsrv.021114-1947) 561.00 KB (574,464 bytes) 3/11/2003 4:11 AM Microsoft Corporation c:\windows\winsxs\x86_microsoft.windows.common-controls_6595b64144ccf1df_5.82.0.0_x-ww_8a69ba05\comctl32.dll
uxtheme 6.00.3718.0 (dnsrv.021114-1947) 191.50 KB (196,096 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\uxtheme.dll
samlib 5.2.3718.0 (dnsrv.021114-1947) 41.00 KB (41,984 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\samlib.dll
cscui 5.2.3718.0 (dnsrv.021114-1947) 300.00 KB (307,200 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\cscui.dll
mprapi 5.2.3718.0 (dnsrv.021114-1947) 77.50 KB (79,360 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mprapi.dll
activeds 5.2.3718.0 (dnsrv.021114-1947) 182.50 KB (186,880 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\activeds.dll
adsldpc 5.2.3718.0 (dnsrv.021114-1947) 138.50 KB (141,824 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\adsldpc.dll
credui 5.2.3718.0 (dnsrv.021114-1947) 158.50 KB (162,304 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\credui.dll
atl 3.05.2283 83.00 KB (84,992 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\atl.dll
oleaut32 5.2.3718.0 485.00 KB (496,640 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\oleaut32.dll
rtutils 5.2.3718.0 (dnsrv.021114-1947) 31.50 KB (32,256 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\rtutils.dll
ntmarta 5.2.3718.0 (dnsrv.021114-1947) 111.50 KB (114,176 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntmarta.dll
clbcatq 2001.12.4648.0 (dnsrv.021114-1947) 469.00 KB (480,256 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\clbcatq.dll
comres 2001.12.4648.0 (dnsrv.021114-1947) 778.00 KB (796,672 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\comres.dll
wbemprox 5.2.3718.0 (dnsrv.021114-1947) 16.50 KB (16,896 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\wbemprox.dll
wbemcomn 5.2.3718.0 (dnsrv.021114-1947) 202.50 KB (207,360 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wbem\wbemcomn.dll
wbemsvc 5.2.3718.0 (dnsrv.021114-1947) 42.00 KB (43,008 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\wbemsvc.dll
fastprox 5.2.3718.0 (dnsrv.021114-1947) 442.00 KB (452,608 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\fastprox.dll
msvcp60 6.05.2144.0 388.00 KB (397,312 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msvcp60.dll
ntdsapi 5.2.3718.0 (dnsrv.021114-1947) 67.00 KB (68,608 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntdsapi.dll
dnsapi 5.2.3718.0 (dnsrv.021114-1947) 146.00 KB (149,504 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\dnsapi.dll
services 5.2.3718.0 (dnsrv.021114-1947) 99.50 KB (101,888 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\services.exe
scesrv 5.2.3718.0 (dnsrv.021114-1947) 311.50 KB (318,976 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\scesrv.dll
authz 5.2.3718.0 (dnsrv.021114-1947) 61.00 KB (62,464 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\authz.dll
umpnpmgr 5.2.3718.0 (dnsrv.021114-1947) 119.50 KB (122,368 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\umpnpmgr.dll
ncobjapi 5.2.3718.0 (dnsrv.021114-1947) 32.50 KB (33,280 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\ncobjapi.dll
eventlog 5.2.3718.0 (dnsrv.021114-1947) 58.50 KB (59,904 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\eventlog.dll
lsass 5.2.3718.0 (dnsrv.021114-1947) 13.00 KB (13,312 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\lsass.exe
lsasrv 5.2.3718.0 (dnsrv.021114-1947) 715.50 KB (732,672 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\lsasrv.dll
samsrv 5.2.3718.0 (dnsrv.021114-1947) 412.50 KB (422,400 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\samsrv.dll
cryptdll 5.2.3718.0 (dnsrv.021114-1947) 29.00 KB (29,696 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\cryptdll.dll
msprivs 5.2.3718.0 (dnsrv.021114-1947) 45.50 KB (46,592 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msprivs.dll
kerberos 5.2.3718.0 (dnsrv.021114-1947) 305.50 KB (312,832 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\kerberos.dll
msv1_0 5.2.3718.0 (dnsrv.021114-1947) 114.00 KB (116,736 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msv1_0.dll

netlogon 5.2.3718.0 (dnsrv.021114-1947) 404.00 KB (413,696 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\netlogon.dll
w32time 5.2.3718.0 (dnsrv.021114-1947) 210.50 KB (215,552 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\w32time.dll
iphlpapi 5.2.3718.0 (dnsrv.021114-1947) 81.00 KB (82,944 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\iphlpapi.dll
schannel 5.2.3718.0 (dnsrv.021114-1947) 145.00 KB (148,480 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\schannel.dll
wdigest 5.2.3718.0 (dnsrv.021114-1947) 61.00 KB (62,464 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wdigest.dll
rassfm 5.2.3718.0 (dnsrv.021114-1947) 20.50 KB (20,992 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\rassfm.dll
kdcsvc 5.2.3718.0 (dnsrv.021114-1947) 203.00 KB (207,872 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\kdcsvc.dll
ntdsa 5.2.3718.0 (dnsrv.021114-1947) 1.31 MB (1,376,256 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntdsa.dll
ntdsatq 5.2.3718.0 (dnsrv.021114-1947) 27.50 KB (28,160 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntdsatq.dll
mswsock 5.2.3718.0 (dnsrv.021114-1947) 226.00 KB (231,424 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mswsock.dll
esent 5.2.3718.0 (dnsrv.021114-1947) 920.50 KB (942,592 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\esent.dll
scecli 5.2.3718.0 (dnsrv.021114-1947) 176.00 KB (180,224 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\scecli.dll
wshtcpip 5.2.3718.0 (dnsrv.021114-1947) 17.50 KB (17,920 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wshtcpip.dll
dssenh 5.2.3718.0 (dnsrv.021114-1947) 131.07 KB (134,216 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\dssenh.dll
svchost 5.2.3718.0 (dnsrv.021114-1947) 12.00 KB (12,288 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\svchost.exe
rpcss 5.2.3718.0 (dnsrv.021114-1947) 268.50 KB (274,944 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\rpcss.dll
dmserver 5.2.3718.0 (dnsrv.021114-1947) 23.50 KB (24,064 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\dmserver.dll
wmisvc 5.2.3718.0 (dnsrv.021114-1947) 131.50 KB (134,656 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\wmisvc.dll
vssapi 5.2.3718.0 (dnsrv.021114-1947) 526.00 KB (538,624 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\vssapi.dll
es 2001.12.4648.0 (dnsrv.021114-1947) 221.00 KB (226,304 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\es.dll
comsvcs 2001.12.4648.0 (dnsrv.021114-1947) 1.11 MB (1,160,704 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\comsvcs.dll
netman 5.2.3718.0 (dnsrv.021114-1947) 200.00 KB (204,800 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\netman.dll
rasapi32 5.2.3718.0 (dnsrv.021114-1947) 219.50 KB (224,768 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\rasapi32.dll
rasman 5.2.3718.0 (dnsrv.021114-1947) 55.00 KB (56,320 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\rasman.dll
tapi32 5.2.3718.0 (dnsrv.021114-1947) 170.50 KB (174,592 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\tapi32.dll
wzcsvc 5.2.3718.0 (dnsrv.021114-1947) 272.50 KB (279,040 bytes) 11/16/2002 12:36 AM Microsoft Corporation c:\windows\system32\wzcsvc.dll
wmi 5.2.3718.0 (dnsrv.021114-1947) 6.50 KB (6,656 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wmi.dll
dhcpcsvc 5.2.3718.0 (dnsrv.021114-1947) 100.50 KB (102,912 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\dhcpcsvc.dll
wzcsapi 5.2.3718.0 (dnsrv.021114-1947) 24.00 KB (24,576 bytes) 11/16/2002 12:36 AM Microsoft Corporation c:\windows\system32\wzcsapi.dll
netshell 5.2.3718.0 (dnsrv.021114-1947) 1.64 MB (1,721,856 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\netshell.dll
clusapi 5.2.3718.0 (dnsrv.021114-1947) 54.50 KB (55,808 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\clusapi.dll
hnetcfg 5.2.3718.0 (dnsrv.021114-1947) 243.50 KB (249,344 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\hnetcfg.dll
wininet 6.00.3718.0 (dnsrv.021114-1947) 591.50 KB (605,696 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wininet.dll
wbemcore 5.2.3718.0 (dnsrv.021114-1947) 453.50 KB (464,384 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\wbemcore.dll
esscli 5.2.3718.0 (dnsrv.021114-1947) 232.50 KB (238,080 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\esscli.dll
wmiutils 5.2.3718.0 (dnsrv.021114-1947) 90.00 KB (92,160 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\wmiutils.dll
repdrvfs 5.2.3718.0 (dnsrv.021114-1947) 165.50 KB (169,472 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\repdrvfs.dll
wmiprvsd 5.2.3718.0 (dnsrv.021114-1947) 405.50 KB (415,232 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\wmiprvsd.dll
wbemess 5.2.3718.0 (dnsrv.021114-1947) 255.00 KB (261,120 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\wbemess.dll
rasdlg 5.2.3718.0 (dnsrv.021114-1947) 640.50 KB (655,872 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\rasdlg.dll
ncprov 5.2.3718.0 (dnsrv.021114-1947) 43.00 KB (44,032 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\ncprov.dll
wkssvc 5.2.3718.0 (dnsrv.021114-1947) 123.00 KB (125,952 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wkssvc.dll
pchsvc 5.2.3718.0 (dnsrv.021114-1947) 30.00 KB (30,720 bytes) 3/10/2003 7:25 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\pchsvc.dll
wbemcons 5.2.3718.0 (dnsrv.021114-1947) 69.00 KB (70,656 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\wbem\wbemcons.dll
explorer 6.00.3718.0 (dnsrv.021114-1947) 995.50 KB (1,019,392 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\explorer.exe
browseui 6.00.3718.0 (dnsrv.021114-1947) 1,009.00 KB (1,033,216 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\browseui.dll
shdocvw 6.00.3718.0 (dnsrv.021114-1947) 1.30 MB (1,358,336 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\shdocvw.dll
apphelp 5.2.3718.0 (dnsrv.021114-1947) 120.00 KB (122,880 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\apphelp.dll
themeui 6.00.3718.0 (dnsrv.021114-1947) 360.50 KB (369,152 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\themeui.dll
msimg32 5.2.3718.0 (dnsrv.021114-1947) 4.50 KB (4,608 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msimg32.dll
linkinfo 5.2.3718.0 (dnsrv.021114-1947) 15.50 KB (15,872 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\linkinfo.dll
ntshrui 6.00.3718.0 (dnsrv.021114-1947) 134.50 KB (137,728 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntshrui.dll
webcheck 6.00.3718.0 (dnsrv.021114-1947) 256.00 KB (262,144 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\webcheck.dll
wsock32 5.2.3718.0 (dnsrv.021114-1947) 22.00 KB (22,528 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wsock32.dll
stobject 5.2.3718.0 (dnsrv.021114-1947) 117.00 KB (119,808 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\stobject.dll
batmeter 6.00.3718.0 (dnsrv.021114-1947) 28.00 KB (28,672 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\batmeter.dll
powrprof 6.00.3718.0 (dnsrv.021114-1947) 14.00 KB (14,336 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\powrprof.dll
printui 5.2.3718.0 (dnsrv.021114-1947) 527.00 KB (539,648 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\printui.dll
cfgmgr32 5.2.3718.0 (dnsrv.021114-1947) 17.00 KB (17,408 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\cfgmgr32.dll
urlmon 6.00.3718.0 (dnsrv.021114-1947) 457.50 KB (468,480 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\urlmon.dll
browselc 6.00.3718.0 (dnsrv.021114-1947) 61.50 KB (62,976 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\browselc.dll
shdoclc 6.00.3718.0 (dnsrv.021114-1947) 521.00 KB (533,504 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\shdoclc.dll

drprov 5.2.3718.0 (dnsrv.021114-1947) 11.50 KB (11,776 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\drprov.dll
ntlanman 5.2.3718.0 (dnsrv.021114-1947) 39.50 KB (40,448 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\ntlanman.dll
netui0 5.2.3718.0 (dnsrv.021114-1947) 73.00 KB (74,752 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\netui0.dll
netui1 5.2.3718.0 (dnsrv.021114-1947) 177.00 KB (181,248 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\netui1.dll
davclnt 5.2.3718.0 (dnsrv.021114-1947) 23.00 KB (23,552 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\davclnt.dll
zipfldr 6.00.3718.0 (dnsrv.021114-1947) 316.00 KB (323,584 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\zipfldr.dll
actxprxy 6.00.3718.0 (dnsrv.021114-1947) 90.50 KB (92,672 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\actxprxy.dll
mprui 5.2.3718.0 (dnsrv.021114-1947) 47.50 KB (48,640 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mprui.dll
netui2 5.2.3718.0 (dnsrv.021114-1947) 300.00 KB (307,200 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\netui2.dll
comdlg32 6.00.3718.0 (dnsrv.021114-1947) 257.00 KB (263,168 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\comdlg32.dll
netmsg 5.2.3718.0 (dnsrv.021114-1947) 178.00 KB (182,272 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\netmsg.dll
netplwiz 5.2.3718.0 (dnsrv.021114-1947) 843.00 KB (863,232 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\netplwiz.dll
mydocs 6.00.3718.0 (dnsrv.021114-1947) 87.00 KB (89,088 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mydocs.dll
cmd 5.2.3718.0 (dnsrv.021114-1947) 370.00 KB (378,880 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\cmd.exe
wpabaln 5.2.3718.0 (dnsrv.021114-1947) 31.00 KB (31,744 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\wpabaln.exe
sqlservr 2000.080.0760.00 7.17 MB (7,520,337 bytes) 3/10/2003 8:59 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\sqlservr.exe
opends60 2000.080.0194.00 24.06 KB (24,639 bytes) 3/10/2003 8:31 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\opends60.dll
ums 2000.080.0760.00 52.55 KB (53,808 bytes) 3/10/2003 8:31 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\ums.dll
sqlsort 2000.080.0760.00 576.56 KB (590,396 bytes) 3/10/2003 8:31 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\sqlsort.dll
msvcirt 7.0.3718.0 (dnsrv.021114-1947) 50.00 KB (51,200 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msvcirt.dll
sqlevn70 2000.080.0760.00 28.00 KB (28,672 bytes) 3/10/2003 8:31 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\resources\1033\sqlevn70.rll
xolehlp 2001.12.4648.0 (dnsrv.021114-1947) 8.00 KB (8,192 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\xolehlp.dll
msdtcprx 2001.12.4648.0 (dnsrv.021114-1947) 411.00 KB (420,864 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\msdtcprx.dll
mtxclu 2001.12.4648.0 (dnsrv.021114-1947) 73.00 KB (74,752 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mtxclu.dll
resutils 5.2.3718.0 (dnsrv.021114-1947) 58.00 KB (59,392 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\resutils.dll
mfc42u 6.05.2283.0 960.00 KB (983,040 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mfc42u.dll
winrnr 5.2.3718.0 (dnsrv.021114-1947) 14.50 KB (14,848 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\winrnr.dll
rasadhlp 5.2.3718.0 (dnsrv.021114-1947) 6.00 KB (6,144 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\rasadhlp.dll
ssnetlib 2000.080.0760.00 80.56 KB (82,492 bytes) 3/10/2003 8:31 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\ssnetlib.dll
ssnmpn70 2000.080.0534.00 24.56 KB (25,148 bytes) 3/10/2003 8:31 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\ssnmpn70.dll
security 5.2.3718.0 (dnsrv.021114-1947) 5.00 KB (5,120 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\security.dll
ssmslpcn 2000.080.0760.00 28.56 KB (29,244 bytes) 3/10/2003 8:31 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\ssmslpcn.dll
sqlftqry 2000.080.0760.00 192.57 KB (197,196 bytes) 3/10/2003 8:32 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\sqlftqry.dll
sqloledb 2000.085.1015.00 484.00 KB (495,616 bytes) 3/10/2003 7:25 PM Microsoft Corporation c:\program files\common files\system\ole db\sqloledb.dll
msdart 2.80.1015.0 (dnsrv.021114-1947) 140.00 KB (143,360 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msdart.dll
msdatl3 2.80.1015.0 (dnsrv.021114-1947) 84.00 KB (86,016 bytes) 3/10/2003 7:25 PM Microsoft Corporation c:\program files\common files\system\ole db\msdatl3.dll
oledb32 2.80.1015.0 (dnsrv.021114-1947) 424.00 KB (434,176 bytes) 3/10/2003 7:25 PM Microsoft Corporation c:\program files\common files\system\ole db\oledb32.dll
oledb32r 2.80.1015.0 (dnsrv.021114-1947) 68.00 KB (69,632 bytes) 3/10/2003 7:25 PM Microsoft Corporation c:\program files\common files\system\ole db\oledb32r.dll
xpstar 2000.080.0760.00 280.56 KB (287,296 bytes) 3/10/2003 8:31 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\xpstar.dll
sqlresld 2000.080.0382.00 28.56 KB (29,248 bytes) 3/10/2003 8:33 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\sqlresld.dll
sqlsvc 2000.080.0760.00 92.56 KB (94,784 bytes) 3/10/2003 8:33 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\sqlsvc.dll
odbc32 3.525.1015.0 212.00 KB (217,088 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\odbc32.dll
odbcbcp 2000.085.1015.00 24.00 KB (24,576 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\odbcbcp.dll
w95scm 2000.080.0760.00 48.56 KB (49,728 bytes) 3/10/2003 8:33 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\w95scm.dll
sqlunirl 2000.080.0728.00 176.56 KB (180,800 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\sqlunirl.dll
shfolder 6.00.3718.0 (dnsrv.021114-1947) 22.50 KB (23,040 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\shfolder.dll
odbcint 3.525.1015.0 92.00 KB (94,208 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\odbcint.dll
sqlsvc 2000.080.0194.00 24.00 KB (24,576 bytes) 3/10/2003 8:33 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\resources\1033\sqlsvc.rll
xpstar 2000.080.0760.00 36.00 KB (36,864 bytes) 3/10/2003 8:31 PM Microsoft Corporation c:\program files\microsoft sql server\mssql\binn\resources\1033\xpstar.rll
mmc 5.2.3718.0 (dnsrv.021114-1947) 762.00 KB (780,288 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mmc.exe
oleacc 4.2.5406.0 (dnsrv.021114-1947) 165.50 KB (169,472 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\oleacc.dll
mmcbase 5.2.3718.0 (dnsrv.021114-1947) 69.00 KB (70,656 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mmcbase.dll
mmcndmgr 5.2.3718.0 (dnsrv.021114-1947) 1.09 MB (1,143,808 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mmcndmgr.dll
msxml3 8.40.9214.0 1.06 MB (1,108,992 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msxml3.dll
filemgmt 5.2.3718.0 (dnsrv.021114-1947) 315.00 KB (322,560 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\filemgmt.dll
mshtml 6.00.3718.0 (dnsrv.021114-1947) 2.71 MB (2,837,504 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mshtml.dll
mlang 6.00.3718.0 (dnsrv.021114-1947) 566.50 KB (580,096 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mlang.dll
msimtf 5.2.3718.0 (dnsrv.021114-1947) 142.50 KB (145,920 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msimtf.dll
msctf 5.2.3718.0 (dnsrv.021114-1947) 276.00 KB (282,624 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msctf.dll
jscript 5.6.0.8028 424.00 KB (434,176 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\jscript.dll
msls31 3.10.349.0 144.00 KB (147,456 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\msls31.dll
imm32 5.2.3718.0 (dnsrv.021114-1947) 103.50 KB (105,984 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\imm32.dll
mshtmled 6.00.3718.0 (dnsrv.021114-1947) 434.00 KB (444,416 bytes) 11/18/2002 9:00 PM Microsoft Corporation

c:\windows\system32\mshtmled.dll
imgutil 6.00.3718.0 (dnsrv.021114-1947) 30.00 KB (30,720 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\imgutil.dll
snmpsnap 5.2.3718.0 (dnsrv.021114-1947) 173.50 KB (177,664 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\snmpsnap.dll
servdeps 5.2.3718.0 (dnsrv.021114-1947) 52.50 KB (53,760 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\servdeps.dll
mmfutil 5.2.3718.0 (dnsrv.021114-1947) 17.00 KB (17,408 bytes) 3/10/2003 7:21 PM Microsoft Corporation c:\windows\system32\mmfutil.dll
helpctr 5.2.3718.0 (dnsrv.021114-1947) 734.50 KB (752,128 bytes) 3/10/2003 7:25 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\helpctr.exe
hcappres 5.2.3718.0 (dnsrv.021114-1947) 6.50 KB (6,656 bytes) 3/10/2003 7:25 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\hcappres.dll
itss 5.2.3718.0 (dnsrv.021114-1947) 119.50 KB (122,368 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\itss.dll
pchshell 5.2.3718.0 (dnsrv.021114-1947) 97.00 KB (99,328 bytes) 3/10/2003 7:25 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\pchshell.dll
vbscript 5.6.0.8028 388.00 KB (397,312 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\vbscript.dll
mfc42 6.05.2283.0 960.00 KB (983,040 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\mfc42.dll
msinfo 5.2.3718.0 (dnsrv.021114-1947) 358.50 KB (367,104 bytes) 3/10/2003 7:25 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\msinfo.dll
riched32 5.2.3718.0 (dnsrv.021114-1947) 3.50 KB (3,584 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\riched32.dll
riched20 5.31.23.1218 395.00 KB (404,480 bytes) 11/18/2002 9:00 PM Microsoft Corporation c:\windows\system32\riched20.dll
helpsvc 5.2.3718.0 (dnsrv.021114-1947) 686.50 KB (702,976 bytes) 3/10/2003 7:25 PM Microsoft Corporation c:\windows\pchealth\helpctr\binaries\helpsvc.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 Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Computer Browser Browser Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Indexing Service CiSvc Stopped 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 Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Distributed File System Dfs Stopped Disabled Own Process c:\windows\system32\dfssvc.exe Normal LocalSystem 0
DHCP Client Dhcp Stopped Disabled 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 Stopped Disabled Share Process c:\windows\system32\svchost.exe -k networkservice Normal NT AUTHORITY\NetworkService 0
Error Reporting Service ERSvc Stopped Disabled Share Process c:\windows\system32\svchost.exe -k winerr Ignore LocalSystem 0
Event Log Eventlog Running Auto Share Process c:\windows\system32\services.exe Normal LocalSystem 0
COM+ Event System EventSystem Running Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Help and Support helpsvc Running Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
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
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 Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Workstation lanmanworkstation Running Manual 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 Stopped Disabled Share Process c:\windows\system32\svchost.exe -k localservice Normal NT AUTHORITY\LocalService 0
Messenger Messenger Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
NetMeeting Remote Desktop Sharing mnmsrvc Stopped Disabled Own Process c:\windows\system32\mnmsrvc.exe Normal LocalSystem 0
Distributed Transaction Coordinator MSDTC Stopped Disabled 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 Stopped Disabled Share Process "c:\program files\common files\system\mssearch\bin\mssearch.exe" Normal LocalSystem 0
MSSQLSERVER MSSQLSERVER Stopped Manual Own Process c:\progra~1\micros~1\mssql\binn\sqlservr.exe Normal LocalSystem 0
MSSQLServerADHelper MSSQLServerADHelper Stopped Manual Own Process c:\program files\microsoft sql server\80\tools\binn\sqladhlp.exe Normal LocalSystem 0
Network DDE NetDDE Stopped 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 Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
File Replication NtFrs Stopped Manual Own Process c:\windows\system32\ntfrs.exe Ignore LocalSystem 0
NT LM Security Support Provider NtLmSsp Stopped Disabled Share Process c:\windows\system32\lsass.exe Normal LocalSystem 0

Removable Storage NtmsSvc Stopped Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Plug and Play PlugPlay Running Auto Share Process c:\windows\system32\services.exe Normal LocalSystem 0
IPSEC Services PolicyAgent Stopped Disabled Share Process c:\windows\system32\lsass.exe Normal LocalSystem 0
Protected Storage ProtectedStorage Stopped Disabled Share Process c:\windows\system32\lsass.exe Normal LocalSystem 0
Remote Access Auto Connection Manager RasAuto Stopped Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Remote Access Connection Manager RasMan Stopped Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Remote Desktop Help Session Manager RDSessMgr Stopped Manual Own Process c:\windows\system32\sessmgr.exe Normal LocalSystem 0
Routing and Remote Access RemoteAccess Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Remote Registry RemoteRegistry Stopped Disabled Share Process c:\windows\system32\svchost.exe -k regsvc Normal NT AUTHORITY\LocalService 0
Remote Procedure Call (RPC) Locator RpcLocator Stopped Manual Own Process c:\windows\system32\locator.exe Normal NT AUTHORITY\NetworkService 0
Remote Procedure Call (RPC) RpcSs Running Auto Share Process c:\windows\system32\svchost -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 Stopped Disabled Share Process c:\windows\system32\lsass.exe Normal LocalSystem 0
Smart Card SCardSvr Stopped Manual Share Process c:\windows\system32\scardsvr.exe Ignore NT AUTHORITY\LocalService 0
Task Scheduler Schedule Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Secondary Logon seclogon Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Ignore LocalSystem 0
System Event Notification SENS Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Internet Connection Firewall (ICF) / Internet Connection Sharing (ICS) SharedAccess Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Shell Hardware Detection ShellHWDetection Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Ignore LocalSystem 0
Print Spooler Spooler Stopped Disabled Own Process c:\windows\system32\spoolsv.exe Normal LocalSystem 0
SQLSERVERAGENT SQLSERVERAGENT Stopped Manual Own Process c:\progra~1\micros~1\mssql\binn\sqlagent.exe Normal LocalSystem 0
Windows Image Acquisition (WIA) stisvc Stopped Disabled Share Process c:\windows\system32\svchost.exe -k imgsvc Normal NT AUTHORITY\LocalService 0
Microsoft Software Shadow Copy Provider swprv Stopped Manual Own Process c:\windows\system32\svchost.exe -k swprv Normal LocalSystem 0
Performance Logs and Alerts SysmonLog Stopped Manual Own Process c:\windows\system32\smlogsvc.exe Normal NT Authority\NetworkService 0
Telephony TapiSrv Stopped Manual Share Process c:\windows\system32\svchost.exe -k tapisrv Normal LocalSystem 0
Terminal Services TermService Stopped Disabled Share Process c:\windows\system32\svchost.exe -k termsvcs Normal LocalSystem 0
Themes Themes Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Telnet TlntSvr Stopped Disabled Own Process c:\windows\system32\tlntsvr.exe Normal NT AUTHORITY\LocalService 0
Distributed Link Tracking Server TrkSvr Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Distributed Link Tracking Client TrkWks Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Terminal Services Session Directory Tssdis Stopped Disabled Own Process c:\windows\system32\tssdis.exe Normal LocalSystem 0
Upload Manager uploadmgr Stopped Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Uninterruptible Power Supply UPS Stopped Manual Own Process c:\windows\system32\ups.exe Normal NT AUTHORITY\LocalService 0
Virtual Disk Service vds Stopped Manual Own Process c:\windows\system32\vds.exe Normal LocalSystem 0
Volume Shadow Copy VSS Stopped Manual Own Process c:\windows\system32\vssvc.exe Normal LocalSystem 0
Windows Time W32Time Stopped Disabled 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
Portable Media Serial Number Service WmdmPmSN Stopped Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Windows Management Instrumentation Driver Extensions Wmi Stopped Manual Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
WMI Performance Adapter WmiApSrv Stopped Manual Own Process c:\windows\system32\wbem\wmiapsrv.exe Normal LocalSystem 0
Automatic Updates wuauserv Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0
Wireless Configuration WZCSVC Stopped Disabled Share Process c:\windows\system32\svchost.exe -k netsvcs Normal LocalSystem 0

[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
Microsoft SQL Server - Switch All Users:Microsoft SQL Server - Switch 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 SHASTA\Administrator:Accessories SHASTA\Administrator
Accessories\Accessibility SHASTA\Administrator:Accessories\Accessibility SHASTA\Administrator
Accessories\Entertainment SHASTA\Administrator:Accessories\Entertainment SHASTA\Administrator
Startup SHASTA\Administrator:Startup SHASTA\Administrator

[Startup Programs]

Program	Command	User Name	Location
desktop	desktop.ini	NT AUTHORITY\SYSTEM	Startup
desktop	desktop.ini	SHASTA\Administrator	Startup
desktop	desktop.ini	.DEFAULT	Startup
desktop	desktop.ini	All Users	Common Startup

[OLE Registration]

Object	Local Server
Sound (OLE2)	sndrec32.exe
Media Clip	mplay32.exe
Video Clip	mplay32.exe /avi
MIDI Sequence	mplay32.exe /mid
Sound	Not Available
Media Clip	Not Available
WordPad Document	"%programfiles%\windows nt\accessories\wordpad.exe"
Windows Media Services DRM Storage object	Not Available
Bitmap Image	mspaint.exe

[Windows Error Reporting]

Time	Type	Details
3/10/2003 8:44 PM	Application Hang	Hanging application sqlmangr.exe, version 2000.80.194.0, hang module hungapp, version 0.0.0.0, hang address 0x00000000.

[Internet Settings]

[Internet Explorer]

[Following are sub-categories of this main category]
[Summary]

Item	Value
Version	6.0.3718.0
Build	63718
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	6.0.3718.0	91 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
advpack.dll	6.0.3718.0	94 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
asctrls.ocx	6.0.3718.0	90 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
browselc.dll	6.0.3718.0	62 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
browseui.dll	6.0.3718.0	1,009 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
cdfview.dll	6.0.3718.0	142 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
comctl32.dll	5.82.3718.0	561 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
dxtrans.dll	6.3.3718.0	192 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
dxtmsft.dll	6.3.3718.0	333 KB	11/18/2002 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	16.0.3718.0	296 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
iepeers.dll	6.0.3718.0	230 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
iesetup.dll	6.0.3718.0	57 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
ieuinit.inf	Not Available	19 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Not Available
iexplore.exe	6.0.3718.0	90 KB	11/18/2002 9:00:00 PM	C:\Program Files\Internet Explorer	Microsoft Corporation
imgutil.dll	6.0.3718.0	30 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
inetcpl.cpl	6.0.3718.0	294 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
inetcplc.dll	6.0.3718.0	108 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
inseng.dll	6.0.3718.0	71 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
mlang.dll	6.0.3718.0	567 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
msencode.dll	2002.10.4.0	112 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Not Available
mshta.exe	6.0.3718.0	26 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtml.dll	6.0.3718.0	2,771 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtml.tlb	6.0.3718.0	1,319 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtmled.dll	6.0.3718.0	434 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
mshtmler.dll	6.0.3718.0	55 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
msident.dll	6.0.3718.0	47 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
msidntld.dll	6.0.3718.0	15 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
msieftp.dll	6.0.3718.0	230 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
msrating.dll	6.0.3718.0	132 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
mstime.dll	6.0.3718.0	491 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
occache.dll	6.0.3718.0	89 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
proctexe.ocx	6.3.3718.0	78 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Intel Corporation
sendmail.dll	6.0.3718.0	52 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
shdoclc.dll	6.0.3718.0	521 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
shdocvw.dll	6.0.3718.0	1,327 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
shfolder.dll	6.0.3718.0	23 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
shlwapi.dll	6.0.3718.0	272 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
tdc.ocx	1.3.0.3130	57 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
url.dll	6.0.3718.0	36 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
urlmon.dll	6.0.3718.0	458 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
webcheck.dll	6.0.3718.0	256 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation
wininet.dll	6.0.3718.0	592 KB	11/18/2002 9:00:00 PM	C:\WINDOWS\system32	Microsoft Corporation

[Connectivity]

Item	Value
Connection Preference	Never dial

LAN Settings

AutoConfigProxy	Not Available
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\LocalService\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 Medium-low
Trusted sites Low
Internet Medium
Restricted sites High

<Client Configuration>

COM+ Application Configuration

-- COM+ Settings (properties of component TPCC.ALLTxns)
-- for each 23 frontends

Transactions: not supported

Enable object pooling
- Minimum pool size: 60
- Maximum pool size: 60
- Creation timeout (ms): 60000

Enable object construction
- Constructor string: "dummy string (do not remove)"

Enable just in time activation
Component supports events and statistics

Concurrency: required

TPCC Application Registry

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\TPCC]
"Path"="C:\\Inetpub\\wwwroot\\"
"NumberOfDeliveryThreads"=dword:00000008
"MaxConnections"=dword:00003a98
"MaxPendingDeliveries"=dword:00000bb8
"DB_Protocol"="DBLIB"
"TxnMonitor"="COM"
"DbServer"="shasta"
"DbName"="tpcc"
"DbUser"="sa"
"DbPassword"=""
"COM_SinglePool"="YES"

InetInfo Registry

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo\Parameters]
"ListenBackLog"=dword:00000032
"DispatchEntries"=hex(7):4c,00,44,00,41,00,50,00,53,00,56,00,43,00,00,00,53,00,\

4d,00,54,00,50,00,53,00,56,00,43,00,00,00,4e,00,4e,00,54,00,50,00,53,00,56,\
  00,43,00,00,00,00,00
"PoolThreadLimit"=dword:000003fe
"ThreadTimeout"=dword:00015180

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\InetInfo\Performance]
"Library"="infoctrs.dll"
"Open"="OpenINFOPerformanceData"
"Close"="CloseINFOPerformanceData"
"Collect"="CollectINFOPerformanceData"
"Last Counter"=dword:000008e4
"Last Help"=dword:000008e5
"First Counter"=dword:000008a4
"First Help"=dword:000008a5
"Library Validation Code"=hex:c6,da,8d,b9,1b,f7,c1,01,10,25,00,00,00,00,00,00
"WbemAdapFileTime"=hex:00,c3,bb,02,47,d4,c0,01
"WbemAdapFileSize"=dword:00002510
"WbemAdapStatus"=dword:00000000

WWW Service Registry

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\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:00000028

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch\AdvancedDataFactory]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\ADCLaunch\RDSServer.DataFactory]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Script Map]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Parameters\Virtual Roots]
"/"="c:\\inetpub\\wwwroot,,205"
"/Scripts"="c:\\inetpub\\scripts,,204"
"/IISHelp"="c:\\winnt\\help\\iishelp,,201"
"/IISAdmin"="C:\\WINNT\\System32\\inetsrv\\iisadmin,,201"
"/IISSamples"="c:\\inetpub\\iissamples,,201"
"/MSADC"="c:\\program files\\common files\\system\\msadc,,205"
"/Printers"="C:\\WINNT\\web\\printers,,201"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Performance]
"Library"="w3ctrs.dll"
"Open"="OpenW3PerformanceData"
"Close"="CloseW3PerformanceData"
"Collect"="CollectW3PerformanceData"
"Last Counter"=dword:00000988
"Last Help"=dword:00000989

"First Counter"=dword:000008e6
"First Help"=dword:000008e7
"Library Validation
Code"=hex:96,fb,c7,c0,1b,f7,c1,01,10,3d,00,00,00,00,00,00
"WbemAdapFileTime"=hex:00,c3,bb,02,47,d4,c0,01
"WbemAdapFileSize"=dword:00001d10
"WbemAdapStatus"=dword:00000000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W3SVC\Security]
"Security"=hex:01,00,14,80,a0,00,00,00,ac,00,00,00,14,00,00,00,30,00,00,00,02,\

00,1c,00,01,00,00,00,02,80,14,00,ff,01,0f,00,01,01,00,00,00,00,00,01,00,00,\

00,00,02,00,70,00,04,00,00,00,00,00,18,00,fd,01,02,00,01,01,00,00,00,00,00,\

05,12,00,00,00,20,15,10,00,00,00,1c,00,ff,01,0f,00,01,02,00,00,00,00,00,05,\

20,00,00,00,20,02,00,00,00,00,00,00,00,00,18,00,8d,01,02,00,01,01,00,00,00,\

00,00,05,0b,00,00,00,20,02,00,00,00,00,1c,00,fd,01,02,00,01,02,00,00,00,00,\

00,05,20,00,00,00,23,02,00,00,00,00,00,00,00,01,01,00,00,00,00,00,05,12,00,00,\
  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: 03/28/2003 05:07:25 PM
[System Information]

[Following are sub-categories of this main category]

[System Summary]

Item	Value
OS Name	Microsoft Windows 2000 Server
Version	5.0.2195 Service Pack 2 Build 2195
OS Manufacturer	Microsoft Corporation
System Name	CL03
System Manufacturer	NEC
System Model	Express5800/120Lf [N8100-748]
System Type	X86-based PC
Processor	x86 Family 6 Model 11 Stepping 1 GenuineIntel ~1261 Mhz
Processor	x86 Family 6 Model 11 Stepping 1 GenuineIntel ~1261 Mhz
BIOS Version	SDS2 BIOS Release 0.10
Windows Directory	C:\WINNT
System Directory	C:\WINNT\System32
Boot Device	\Device\Harddisk0\Partition1
Locale	United States
User Name	CL03\Administrator
Total Physical Memory	1,047,852 KB
Available Physical Memory	837,380 KB
Total Virtual Memory	3,570,436 KB
Available Virtual Memory	3,238,200 KB
Page File Space	2,522,584 KB
Page File	C:\pagefile.sys

[Hardware Resources]

[Following are sub-categories of this main category]

[Conflicts/Sharing]

Resource	Device
IRQ 10	Standard OpenHCD USB Host Controller
IRQ 10	PCI standard host CPU bridge

[DMA]

Channel	Device	Status
4	Direct memory access controller	OK
1	ECP Printer Port (LPT1)	OK
2	Standard floppy disk controller	OK

[Forced Hardware]

Device	PNP Device ID
No Forced Hardware	

[I/O]

Address Range	Device	Status
0x0000-0x0CF7	PCI bus	OK
0x0000-0x0CF7	Direct memory access controller	OK
0x0D00-0x0FFF	PCI bus	OK
0x2000-0x24B7	PCI bus	OK
0x2000-0x24B7	ATI Technologies Inc. RAGE XL PCI	OK
0x03B0-0x03BB	ATI Technologies Inc. RAGE XL PCI	OK
0x03C0-0x03DF	ATI Technologies Inc. RAGE XL PCI	OK
0x2400-0x243F	Intel 8255x-based PCI Ethernet Adapter (10/100)	OK
0x2440-0x247F	Intel 8255x-based PCI Ethernet Adapter (10/100) #2	OK
0x2480-0x249F	Intel(R) PRO/100 WfM PCI Adapter	OK
0x0A79-0x0A79	ISAPNP Read Data Port	OK
0x0279-0x0279	ISAPNP Read Data Port	OK
0x02F4-0x02F7	ISAPNP Read Data Port	OK
0x0060-0x0060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	OK
0x0064-0x0064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	OK
0x0070-0x0071	System CMOS/real time clock	OK
0x0010-0x001F	Direct memory access controller	OK
0x0080-0x008F	Direct memory access controller	OK
0x00C0-0x00DF	Direct memory access controller	OK
0x0020-0x0021	Programmable interrupt controller	OK
0x00A0-0x00A1	Programmable interrupt controller	OK
0x00A0-0x00A1	ISA Plug and Play bus	OK
0x0040-0x0043	System timer	OK
0x00F0-0x00FF	Numeric data processor	OK
0x0061-0x0061	System speaker	OK
0x002E-0x002F	Motherboard resources	OK
0x0540-0x055F	Motherboard resources	OK
0x0560-0x0563	Motherboard resources	OK
0x0564-0x0567	Motherboard resources	OK
0x0568-0x056F	Motherboard resources	OK
0x00E0-0x00FF	Motherboard resources	OK
0x0600-0x061F	Motherboard resources	OK
0x0580-0x058D	Motherboard resources	OK
0x0092-0x0092	Motherboard resources	OK
0x0B04-0x0B04	Motherboard resources	OK
0x0419-0x041B	Motherboard resources	OK
0x041D-0x041F	Motherboard resources	OK
0x04D0-0x04D1	Motherboard resources	OK
0x04D6-0x04D6	Motherboard resources	OK
0x0C00-0x0C01	Motherboard resources	OK
0x0C06-0x0C08	Motherboard resources	OK
0x0C14-0x0C14	Motherboard resources	OK
0x0C49-0x0C4A	Motherboard resources	OK
0x0C50-0x0C51	Motherboard resources	OK
0x0C52-0x0C52	Motherboard resources	OK
0x0C6C-0x0C6C	Motherboard resources	OK
0x0C6F-0x0C6F	Motherboard resources	OK
0x0CD6-0x0CD7	Motherboard resources	OK
0x0F50-0x0F58	Motherboard resources	OK
0x0374-0x0375	Motherboard resources	OK
0xFE00-0xFE20	Motherboard resources	OK
0x0220-0x0220	Motherboard resources	OK
0x0225-0x0225	Motherboard resources	OK
0x0228-0x0228	Motherboard resources	OK
0x022A-0x022E	Motherboard resources	OK
0x0102-0x0105	Motherboard resources	OK
0x0107-0x0107	Motherboard resources	OK
0x03F8-0x03FF	Communications Port (COM1)	OK
0x02F8-0x02FF	Communications Port (COM2)	OK
0x0378-0x037F	ECP Printer Port (LPT1)	OK
0x0778-0x077F	ECP Printer Port (LPT1)	OK
0x03F0-0x03F5	Standard floppy disk controller	OK
0x03F7-0x03F7	Standard floppy disk controller	OK
0x0CA6-0x0CA6	Microsoft ACPI-Compliant Embedded Controller	OK
0x0CA7-0x0CA7	Microsoft ACPI-Compliant Embedded Controller	OK
0x24A0-0x24AF	Standard Dual Channel PCI IDE Controller	OK
0x24B0-0x24B3	Standard Dual Channel PCI IDE Controller	OK
0x01F0-0x01F7	Primary IDE Channel	OK
0x03F6-0x03F6	Primary IDE Channel	OK
0x0170-0x0177	Secondary IDE Channel	OK
0x0376-0x0376	Secondary IDE Channel	OK
0x2800-0x2CFF	PCI bus	OK
0x2800-0x2CFF	Adaptec AIC-7899 Ultra160/m PCI SCSI Card	OK
0x2C00-0x2CFF	Adaptec AIC-7899 Ultra160/m PCI SCSI Card	OK

[IRQs]

IRQ Number Device
9 Microsoft ACPI-Compliant System
20 ATI Technologies Inc. RAGE XL PCI
18 Intel 8255x-based PCI Ethernet Adapter (10/100)
19 Intel 8255x-based PCI Ethernet Adapter (10/100) #2
24 Intel(R) PRO/100 WfM PCI Adapter
1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
12 PS/2 Compatible Mouse
8 System CMOS/real time clock
13 Numeric data processor
4 Communications Port (COM1)
3 Communications Port (COM2)
6 Standard floppy disk controller
15 Secondary IDE Channel
10 Standard OpenHCD USB Host Controller
10 PCI standard host CPU bridge
16 Adaptec AIC-7899 Ultra160/m PCI SCSI Card
17 Adaptec AIC-7899 Ultra160/m PCI SCSI Card

[Memory]

Range Device Status
0xA0000-0xBFFFF PCI bus OK
0xA0000-0xBFFFF ATI Technologies Inc. RAGE XL PCI OK
0xC0000-0xC3FFF PCI bus OK
0xC4000-0xC7FFF PCI bus OK
0xC8000-0xCBFFF PCI bus OK
0xCC000-0xCFFFF PCI bus OK
0xD0000-0xD3FFF PCI bus OK
0xD4000-0xD7FFF PCI bus OK
0xD8000-0xDBFFF PCI bus OK
0xDC000-0xDFFFF PCI bus OK
0xE0000-0xFFFFF PCI bus OK
0xFC000000-0xFDFFFFFF PCI bus OK
0xFC000000-0xFDFFFFFF Intel(R) PRO/100 WfM PCI Adapter OK
0xFE000000-0xFE0FFFFF PCI bus OK
0xFE000000-0xFE0FFFFF Intel(R) PRO/100 WfM PCI Adapter OK
0xFD000000-0xFDFFFFFF ATI Technologies Inc. RAGE XL PCI OK
0xFC140000-0xFC140FFF ATI Technologies Inc. RAGE XL PCI OK
0xFC141000-0xFC141FFF Intel 8255x-based PCI Ethernet Adapter (10/100) OK
0xFC100000-0xFC11FFFF Intel 8255x-based PCI Ethernet Adapter (10/100) OK
0xFC142000-0xFC142FFF Intel 8255x-based PCI Ethernet Adapter (10/100) #2 OK
0xFC120000-0xFC13FFFF Intel 8255x-based PCI Ethernet Adapter (10/100) #2 OK
0xFC143000-0xFC143FFF Standard OpenHCD USB Host Controller OK
0xFE100000-0xFE4FFFFF PCI bus OK
0xFE100000-0xFE4FFFFF Adaptec AIC-7899 Ultra160/m PCI SCSI Card OK
0xFE101000-0xFE101FFF Adaptec AIC-7899 Ultra160/m PCI SCSI Card OK

[Components]

[Following are sub-categories of this main category]

[Multimedia]

[Following are sub-categories of this main category]

[Audio Codecs]

Codec Manufacturer Description Status File
Version Size Creation Date
c:\winnt\system32\iac25_32.ax Intel Corporation Indeo® audio software OK
C:\WINNT\System32\IAC25_32.AX 2.05.53
195.00 KB (199,680 bytes) 12/8/1999 5:00:00 AM
c:\winnt\system32\msg723.acm Microsoft Corporation
OK C:\WINNT\System32\MSG723.ACM
4.4.3385 106.77 KB (109,328 bytes) 5/9/2002 2:14:26 PM
c:\winnt\system32\lhacm.acm Microsoft Corporation
OK C:\WINNT\System32\LHACM.ACM
4.4.3385 33.27 KB (34,064 bytes) 5/9/2002 2:14:27 PM
c:\winnt\system32\tssoft32.acm DSP GROUP, INC.
OK C:\WINNT\System32\TSSOFT32.ACM
1.01 9.27 KB (9,488 bytes) 12/8/1999 5:00:00 AM
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 AM
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 AM
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 AM
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 AM

[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 AM
c:\winnt\system32\msh263.drv Microsoft Corporation
OK C:\WINNT\System32\MSH263.DRV
4.4.3385 252.27 KB (258,320 bytes) 5/9/2002 2:13:58 PM
c:\winnt\system32\msvidc32.dll Microsoft Corporation
OK C:\WINNT\System32\MSVIDC32.DLL
5.00.2134.1 27.27 KB (27,920 bytes)
12/8/1999 5:00:00 AM
c:\winnt\system32\msh261.drv Microsoft Corporation
OK C:\WINNT\System32\MSH261.DRV
4.4.3385 163.77 KB (167,696 bytes) 5/9/2002 2:14:26 PM
c:\winnt\system32\msrle32.dll Microsoft Corporation
OK C:\WINNT\System32\MSRLE32.DLL
5.00.2134.1 10.77 KB (11,024 bytes)
12/8/1999 5:00:00 AM
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 AM
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 AM

[CD-ROM]

Item Value
Drive D:
Description CD-ROM Drive
Media Loaded False
Media Type CD-ROM
Name MATSHITA CD-ROM CR-177
Manufacturer (Standard CD-ROM drives)
Status OK
Transfer Rate Not Available
SCSI Target ID 0
PNP Device ID IDE\CDROMMATSHITA_CD-ROM_CR-177_____7N05____\5&8B19DAD&0&0.0.0

[Sound Device]

Item Value
No sound devices

[Display]

Item Value
Name ATI Technologies Inc. RAGE XL PCI
PNP Device ID PCI\VEN_1002&DEV_4752&SUBSYS_81351033&REV_27\3&267A616A&0&10
Adapter Type ATI RAGE XL PCI, ATI Technologies Inc. compatible
Adapter Description ATI Technologies Inc. RAGE XL PCI
Adapter RAM 4.00 MB (4,194,304 bytes)
Installed Drivers atidrab.dll
Driver Version 5.00.2179.1
INF File display.inf (atirage3 section)
Color Planes 1
Color Table Entries 4294967296
Resolution 1024 x 768 x 60 hertz
Bits/Pixel 32

[Infrared]

Item Value
No infrared devices

[Input]

[Following are sub-categories of this main category]

[Keyboard]

Item Value
Description Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
Name Enhanced (101- or 102-key)
Layout 00000409
PNP Device ID ACPI\PNP0303\4&32BA4B66&0
NumberOfFunctionKeys 12

[Pointing Device]

Item Value
Hardware Type PS/2 Compatible Mouse
Number of Buttons 5
Status OK
PNP Device ID ACPI\PNP0F13\4&32BA4B66&0
Power Management Supported False
Double Click Threshold 6
Handedness Right Handed Operation

[Modem]

Item Value
No modems

[Network]

[Following are sub-categories of this main category]

[Adapter]

Item Value
Name [00000000] RAS Async Adapter
Adapter Type Not Available
Product Name RAS Async Adapter
Installed True
PNP Device ID Not Available
Last Reset 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_81351033&REV_0D\3&267A616A&0&18
Last Reset Not Available
Index 5
Service Name E100B
IP Address 10.1.1.3
IP Subnet 255.255.255.0
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:00:4C:0F:7F:81
Service Name E100B
IRQ Number 18
I/O Port 0x2400-0x243F
Driver c:\winnt\system32\drivers\e100bnt5.sys (119056, 5.40.17.0000)

Name [00000006] Intel 8255x-based PCI Ethernet Adapter (10/100)
Adapter Type Ethernet 802.3
Product Name Intel 8255x-based PCI Ethernet Adapter (10/100)
Installed True
PNP Device ID PCI\VEN_8086&DEV_1229&SUBSYS_81351033&REV_0D\3&267A616A&0&20
Last Reset Not Available
Index 6
Service Name E100B
IP Address 10.10.3.250
IP Subnet 255.255.255.0
Default IP Gateway Not Available
DHCP Enabled False
DHCP Server Not Available
DHCP Lease Expires Not Available
DHCP Lease Obtained Not Available
MAC Address 00:00:4C:0F:7F:82
Service Name E100B
IRQ Number 19
I/O Port 0x2440-0x247F
Driver c:\winnt\system32\drivers\e100bnt5.sys (119056,

5.40.17.0000)

Name [00000007] Intel(R) PRO/100 WfM PCI Adapter
Adapter Type Ethernet 802.3
Product Name Intel(R) PRO/100 WfM PCI Adapter
Installed True
PNP Device ID
PCI\VEN_8086&DEV_1229&SUBSYS_00048086&REV_02\3&267A616A&0&48
Last Reset Not Available
Index 7
Service Name E100B
IP Address 10.10.103.250
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:A0:C9:B8:FF:06
Service Name E100B
IRQ Number 24
I/O Port 0x2480-0x249F
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_{A5AFD535-038B-4F3D-9BCD-107E16BC15F6}] SEQPACKET 4
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_{A5AFD535-038B-4F3D-9BCD-107E16BC15F6}] DATAGRAM 4
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_{2248C89F-0698-4BB5-8A18-3F6EDB558D1B}] 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_{2248C89F-0698-4BB5-8A18-3F6EDB558D1B}] 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_{2A71D13A-9D6F-40A7-BEE9-576F8069BF5A}] 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_{2A71D13A-9D6F-40A7-BEE9-576F8069BF5A}] 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_{DBD1E8BA-7CE3-44A9-A4D9-0E9BB550F55F}] 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_{DBD1E8BA-7CE3-44A9-A4D9-0E9BB550F55F}] DATAGRAM 1
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4CB3FC50-E5CD-46BB-AA31-9FCC4B2572AB}] SEQPACKET 2
ConnectionlessService False
GuaranteesDelivery True
GuaranteesSequencing True
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting False
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

Name MSAFD NetBIOS [\Device\NetBT_Tcpip_{4CB3FC50-E5CD-46BB-AA31-9FCC4B2572AB}] DATAGRAM 2
ConnectionlessService True
GuaranteesDelivery False
GuaranteesSequencing False
MaximumAddressSize 20 bytes
MaximumMessageSize 64000 bytes
MessageOriented True
MinimumAddressSize 20 bytes
PseudoStreamOriented False
SupportsBroadcasting True
SupportsConnectData False
SupportsDisconnectData False
SupportsEncryption False
SupportsExpeditedData False
SupportsGracefulClosing False
SupportsGuaranteedBandwidth False
SupportsMulticasting False

[WinSock]

Item Value
File c:\winnt\system32\winsock.dll
Version 3.10
Size 2.80 KB (2,864 bytes)

File c:\winnt\system32\wsock32.dll
Version 5.00.2195.2871
Size 21.27 KB (21,776 bytes)

[Ports]

[Following are sub-categories of this main category]

[Serial]

Item Value
Name COM1
Status OK
PNP Device ID ACPI\PNP0501\1
Maximum Input Buffer Size 0
Maximum Output Buffer Size False
Settable Baud Rate True
Settable Data Bits True
Settable Flow Control True
Settable Parity True
Settable Parity Check True
Settable Stop Bits True
Settable RLSD True
Supports RLSD True
Supports 16 Bit Mode False
Supports Special Characters False
Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy 0
Abort Read/Write on Error 0
Binary Mode Enabled -1
Continue XMit on XOff 0
CTS Outflow Control 0
Discard NULL Bytes 0
DSR Outflow Control 0
DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0
Error Replacement Enabled 0
Event Character 0
Parity Check Enabled 0
RTS Flow Control Type Enable
XOff Character 19
XOffXMit Threshold 512
XOn Character 17
XOnXMit Threshold 2048
XOnXOff InFlow Control 0
XOnXOff OutFlow Control 0
IRQ Number 4
I/O Port 0x03F8-0x03FF
Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

Name COM2
Status OK
PNP Device ID ACPI\PNP0501\2
Maximum Input Buffer Size 0
Maximum Output Buffer Size False
Settable Baud Rate True
Settable Data Bits True
Settable Flow Control True
Settable Parity True
Settable Parity Check True
Settable Stop Bits True
Settable RLSD True
Supports RLSD True
Supports 16 Bit Mode False
Supports Special Characters False

Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity None
Busy 0
Abort Read/Write on Error 0
Binary Mode Enabled -1
Continue XMit on XOff 0
CTS Outflow Control 0
Discard NULL Bytes 0
DSR Outflow Control 0
DSR Sensitivity 0
DTR Flow Control Type Enable
EOF Character 0
Error Replace Character 0
Error Replacement Enabled 0
Event Character 0
Parity Check Enabled 0
RTS Flow Control Type Enable
XOff Character 19
XOffXMit Threshold 512
XOn Character 17
XOnXMit Threshold 2048
XOnXOff InFlow Control 0
XOnXOff OutFlow Control 0
IRQ Number 3
I/O Port 0x02F8-0x02FF
Driver c:\winnt\system32\drivers\serial.sys (62416, 5.00.2195.2780)

[Parallel]

Item Value
Name LPT1
PNP Device ID ACPI\PNP0401\4&32BA4B66&0

[Storage]

[Following are sub-categories of this main category]

[Drives]

Item Value
Drive A:
Description 3 1/2 Inch Floppy Drive

Drive C:
Description Local Fixed Disk
Compressed False
File System NTFS
Size 8.46 GB (9,088,901,120 bytes)
Free Space 5.70 GB (6,117,363,712 bytes)
Volume Name
Volume Serial Number 047AA188
Partition Disk #0, Partition #0
Partition Size 8.46 GB (9,088,902,144 bytes)
Starting Offset 32256 bytes
Drive Description Disk drive
Drive Manufacturer (Standard disk drives)
Drive Model SEAGATE ST39102LC SCSI Disk Device
Drive BytesPerSector 512
Drive MediaLoaded True
Drive MediaType Fixed hard disk media
Drive Partitions 1
Drive SCSIBus 0
Drive SCSILogicalUnit 0
Drive SCSIPort 2
Drive SCSITargetId 0
Drive SectorsPerTrack 63
Drive Size 9097159680 bytes
Drive TotalCylinders 1106
Drive TotalSectors 17767890
Drive TotalTracks 282030
Drive TracksPerCylinder 255

Drive E:
Description Network Connection
Provider Name \\cl01\c$

[SCSI]

Item Value
Name Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Caption Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Driver adpu160m
Status OK
PNP Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81351033&REV_01\3&1070020&0&20
Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81351033&REV_01\3&1070020&0&20
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 16
I/O Port 0x2800-0x2CFF
Driver c:\winnt\system32\drivers\adpu160m.sys (64432, v3.10a)

Name Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Caption Adaptec AIC-7899 Ultra160/m PCI SCSI Card
Driver adpu160m
Status OK
PNP Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81351033&REV_01\3&1070020&0&21
Device ID
PCI\VEN_9005&DEV_00CF&SUBSYS_81351033&REV_01\3&1070020&0&21
Device Map Not Available
Index Not Available
Max Number Controlled Not Available
IRQ Number 17
I/O Port 0x2C00-0x2CFF
Driver c:\winnt\system32\drivers\adpu160m.sys (64432, v3.10a)

[Printing]

Name Port Name Server Name
No printing information

[Problem Devices]

Device PNP Device ID Error Code
No Problem Devices

[USB]

Device PNP Device ID
Standard OpenHCD USB Host Controller
PCI\VEN_1166&DEV_0220&SUBSYS_81351033&REV_05\3&267A616A&0&7A
USB Root Hub USB\ROOT_HUB\4&CE8866E&0

[Software Environment]

[Following are sub-categories of this main category]

[Drivers]

Name Description File Type Started Start Mode
State Status Error Control Accept
Pause Accept Stop
abiosdsk Abiosdsk Not Available Kernel Driver
False Disabled Stopped OK Ignore
False False
abp480n5 abp480n5 Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
acpi Microsoft ACPI Driver c:\winnt\system32\drivers\acpi.sys
Kernel Driver True Boot Running
OK Normal False True
acpiec Microsoft Embedded Controller Driver
c:\winnt\system32\drivers\acpiec.sys Kernel
Driver True Boot Running OK Normal
False True
adptsf Adaptec DuraLAN PCI Ethernet/Fast Ethernet driver for Windows NT c:\winnt\system32\drivers\adptsf50.sys
Kernel Driver False Manual 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 PRO Adapter Driver
c:\winnt\system32\drivers\e100bnt5.sys Kernel
Driver True Manual Running OK Normal
False True
efs EFS c:\winnt\system32\drivers\efs.sys File
System Driver True Disabled Running OK
Normal False True
fastfat Fastfat c:\winnt\system32\drivers\fastfat.sys
File System Driver True Disabled Running
OK Normal False True
fd16_700 Fd16_700 Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
fdc Floppy Disk Controller Driver
c:\winnt\system32\drivers\fdc.sys Kernel Driver
True Manual Running OK Normal
False True
fips Fips c:\winnt\system32\drivers\fips.sys Kernel
Driver True Auto Running OK Normal
False True
fireport fireport Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
flashpnt flashpnt Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
flpydisk Floppy Disk Driver
c:\winnt\system32\drivers\flpydisk.sys Kernel
Driver True Manual Running OK Normal
False True
ftdisk Volume Manager Driver
c:\winnt\system32\drivers\ftdisk.sys Kernel
Driver True Boot Running OK Normal
False True
gpc Generic Packet Classifier
c:\winnt\system32\drivers\msgpc.sys Kernel
Driver True Manual Running OK Normal
False True
i8042prt i8042 Keyboard and PS/2 Mouse Port Driver
c:\winnt\system32\drivers\i8042prt.sys Kernel
Driver True System Running OK Normal
False True
ini910u ini910u Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
intelide IntelIde Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
ipfilterdriver IP Traffic Filter Driver
c:\winnt\system32\drivers\ipfltdrv.sys Kernel
Driver False Manual Stopped OK Normal
False False
ipinip IP in IP Tunnel Driver
c:\winnt\system32\drivers\ipinip.sys Kernel
Driver False Manual Stopped OK Normal
False False
ipnat IP Network Address Translator
c:\winnt\system32\drivers\ipnat.sys Kernel
Driver False Manual Stopped OK Normal
False False
ipsec IPSEC driver
c:\winnt\system32\drivers\ipsec.sys Kernel
Driver True Manual Running OK Normal
False True
ipsraidn ipsraidn Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
isapnp PnP ISA/EISA Bus Driver
c:\winnt\system32\drivers\isapnp.sys Kernel
Driver True Boot Running OK Critical
False True
kbdclass Keyboard Class Driver
c:\winnt\system32\drivers\kbdclass.sys Kernel
Driver True System Running OK Normal
False True
ksecdd KSecDD c:\winnt\system32\drivers\ksecdd.sys
Kernel Driver True Boot Running
OK Normal False True
lbrtfdc lbrtfdc Not Available Kernel Driver
False System Stopped OK Ignore
False False
lp6nds35 lp6nds35 Not Available Kernel Driver
False Disabled Stopped OK Normal
False False
mnmdd mnmdd c:\winnt\system32\drivers\mnmdd.sys
Kernel Driver True System Running
OK Ignore False True
modem Modem c:\winnt\system32\drivers\modem.sys
Kernel Driver False Manual Stopped
OK Ignore False False
mouclass Mouse Class Driver
c:\winnt\system32\drivers\mouclass.sys Kernel
Driver True System Running OK Normal

```
            False   True
mountmgr    MountMgr    c:\winnt\system32\drivers\mountmgr.sys
            Kernel Driver           True    Boot    Running
            OK      Normal  False   True
mraid35x    mraid35x    Not Available           Kernel Driver
            False   Disabled    Stopped OK      Normal
            False   False
mrxsmb      MRXSMB  c:\winnt\system32\drivers\mrxsmb.sys
            File System Driver      True    System  Running
            OK      Normal  False   True
msfs        Msfs    c:\winnt\system32\drivers\msfs.sys
            File System Driver      True    System  Running
            OK      Normal  False   True
mskssrv     Microsoft Streaming Service Proxy
            c:\winnt\system32\drivers\mskssrv.sys       Kernel
Driver      False   Manual  Stopped OK      Normal
            False   False
mspclock    Microsoft Streaming Clock Proxy
            c:\winnt\system32\drivers\mspclock.sys      Kernel
Driver      False   Manual  Stopped OK      Normal
            False   False
mspqm       Microsoft Streaming Quality Manager Proxy
            c:\winnt\system32\drivers\mspqm.sys         Kernel
Driver      False   Manual  Stopped OK      Normal
            False   False
mup         Mup     c:\winnt\system32\drivers\mup.sys   File
System Driver           True    Boot    Running OK
            Normal  False   True
ncrc710     Ncrc710     Not Available           Kernel Driver
            False   Disabled    Stopped OK      Normal
            False   False
ndis        NDIS System Driver  c:\winnt\system32\drivers\ndis.sys
            Kernel Driver           True    Boot    Running
            OK      Normal  False   True
ndistapi    Remote Access NDIS TAPI Driver
            c:\winnt\system32\drivers\ndistapi.sys      Kernel
Driver      True    Manual  Running OK      Normal
            False   True
ndiswan     Remote Access NDIS WAN Driver
            c:\winnt\system32\drivers\ndiswan.sys       Kernel
Driver      True    Manual  Running OK      Normal
            False   True
ndproxy     NDIS Proxy
            c:\winnt\system32\drivers\ndproxy.sys       Kernel
Driver      True    Manual  Running OK      Normal
            False   True
netbios     NetBIOS Interface
            c:\winnt\system32\drivers\netbios.sys       File
System Driver           True    System  Running OK
            Normal  False   True
netbt       NetBios over Tcpip
            c:\winnt\system32\drivers\netbt.sys         Kernel
Driver      True    System  Running OK      Normal
            False   True
netdetect   NetDetect   c:\winnt\system32\drivers\netdtect.sys
            Kernel Driver           False   Manual  Stopped
            OK      Normal  False   False
npfs        Npfs    c:\winnt\system32\drivers\npfs.sys  File
System Driver           True    System  Running OK
            Normal  False   True
ntfs        Ntfs    c:\winnt\system32\drivers\ntfs.sys  File
System Driver           True    Disabled    Running OK
            Normal  False   True
null        Null    c:\winnt\system32\drivers\null.sys  Kernel
Driver      True    System  Running OK      Normal
            False   True
nwlnkflt    IPX Traffic Filter Driver
            c:\winnt\system32\drivers\nwlnkflt.sys      Kernel
Driver      False   Manual  Stopped OK      Normal
            False   False
nwlnkfwd    IPX Traffic Forwarder Driver
            c:\winnt\system32\drivers\nwlnkfwd.sys      Kernel
Driver      False   Manual  Stopped OK      Normal
            False   False
openhci     Microsoft USB Open Host Controller Driver
            c:\winnt\system32\drivers\openhci.sys       Kernel
Driver      True    Manual  Running OK      Normal
            False   True
parallel    Parallel class driver
            c:\winnt\system32\drivers\parallel.sys      Kernel
Driver      True    Manual  Running OK      Normal
            False   True
parport     Parallel port driver
            c:\winnt\system32\drivers\parport.sys       Kernel
Driver      True    System  Running OK      Ignore
            False   True
partmgr     PartMgr     c:\winnt\system32\drivers\partmgr.sys
            Kernel Driver           True    Boot    Running
            OK      Normal  False   True
parvdm      ParVdm  c:\winnt\system32\drivers\parvdm.sys
            Kernel Driver           True    Auto    Running
            OK      Ignore  False   True
pci         PCI Bus Driver      c:\winnt\system32\drivers\pci.sys
            Kernel Driver           True    Boot    Running
            OK      Critical    False   True
pcidump     PCIDump     Not Available           Kernel Driver
            False   System  Stopped OK      Ignore
            False   False
pciide      PCIIde  c:\winnt\system32\drivers\pciide.sys
            Kernel Driver           True    Boot    Running
            OK      Normal  False   True
pcmcia      Pcmcia  c:\winnt\system32\drivers\pcmcia.sys
            Kernel Driver           False   Disabled    Stopped
            OK      Normal  False   False
pdcomp      PDCOMP  Not Available           Kernel Driver
            False   Manual  Stopped OK      Ignore
            False   False
pdframe     PDFRAME Not Available           Kernel Driver
            False   Manual  Stopped OK      Ignore
            False   False
pdreli      PDRELI  Not Available           Kernel Driver
            False   Manual  Stopped OK      Ignore
            False   False
pdrframe    PDRFRAME        Not Available   Kernel
Driver      False   Manual  Stopped OK      Ignore
            False   False
pptpminiport        WAN Miniport (PPTP)
            c:\winnt\system32\drivers\raspptp.sys       Kernel
Driver      True    Manual  Running OK      Normal
            False   True
ptilink     Direct Parallel Link Driver
            c:\winnt\system32\drivers\ptilink.sys       Kernel
Driver      True    Manual  Running OK      Normal
            False   True
ql1080      ql1080      Not Available           Kernel Driver
            False   Disabled    Stopped OK      Normal
            False   False
ql10wnt     Ql10wnt     Not Available           Kernel Driver
            False   Disabled    Stopped OK      Normal
            False   False
ql1240      ql1240      Not Available           Kernel Driver
            False   Disabled    Stopped OK      Normal
            False   False
ql2100      ql2100      Not Available           Kernel Driver
            False   Disabled    Stopped OK      Normal
            False   False
rasacd      Remote Access Auto Connection Driver
            c:\winnt\system32\drivers\rasacd.sys        Kernel
Driver      True    System  Running OK      Normal
            False   True
rasl2tp     WAN Miniport (L2TP)
            c:\winnt\system32\drivers\rasl2tp.sys       Kernel
Driver      True    Manual  Running OK      Normal
            False   True
raspti      Direct Parallel
            c:\winnt\system32\drivers\raspti.sys        Kernel
Driver      True    Manual  Running OK      Normal
            False   True
rca         Microsoft Streaming Network Raw Channel Access
            c:\winnt\system32\drivers\rca.sys   Kernel Driver
            False   Manual  Stopped OK      Normal
            False   False
rdbss       Rdbss   c:\winnt\system32\drivers\rdbss.sys
            File System Driver      True    System  Running
            OK      Normal  False   True
rdpwd       RDPWD   c:\winnt\system32\drivers\rdpwd.sys
            Kernel Driver           False   Manual  Stopped
            OK      Ignore  False   False
redbook     Digital CD Audio Playback Filter Driver
            c:\winnt\system32\drivers\redbook.sys       Kernel
Driver      False   System  Stopped OK      Normal
            False   False
serenum     Serenum Filter Driver
            c:\winnt\system32\drivers\serenum.sys       Kernel
Driver      True    Manual  Running OK      Normal
            False   True
serial      Serial port driver
            c:\winnt\system32\drivers\serial.sys        Kernel
Driver      True    System  Running OK      Ignore
            False   True
sfloppy     Sfloppy     c:\winnt\system32\drivers\sfloppy.sys
            Kernel Driver           False   System  Stopped
            OK      Ignore  False   False
sglfb       sglfb       Not Available           Kernel Driver
            False   System  Stopped OK      Normal
            False   False
simbad      Simbad      Not Available           Kernel Driver
            False   Disabled    Stopped OK      Normal
            False   False
sparrow     Sparrow     Not Available           Kernel Driver
            False   Disabled    Stopped OK      Normal
            False   False
spud        Special Purpose Utility Driver
            c:\winnt\system32\drivers\spud.sys          Kernel
Driver      True    Manual  Running OK      Normal
            False   True
```

```
srv         Srv         c:\winnt\system32\drivers\srv.sys   File
System Driver           True        Manual      Running     OK
            Normal      False       True
swenum      Software Bus Driver
            c:\winnt\system32\drivers\swenum.sys            Kernel
Driver      True        Manual      Running     OK          Normal
            False       True
symc810     symc810     Not Available           Kernel Driver
            False       Disabled    Stopped     OK          Normal
            False       False
symc8xx     symc8xx     Not Available           Kernel Driver
            False       Disabled    Stopped     OK          Normal
            False       False
sym_hi      sym_hi      Not Available           Kernel Driver
            False       Disabled    Stopped     OK          Normal
            False       False
tcpip       TCP/IP Protocol Driver
            c:\winnt\system32\drivers\tcpip.sys             Kernel
Driver      True        System      Running     OK          Normal
            False       True
tdasync     TDASYNC     c:\winnt\system32\drivers\tdasync.sys
            Kernel Driver           False       Manual      Stopped
            OK          Ignore      False       False
tdipx       TDIPX       c:\winnt\system32\drivers\tdipx.sys
            Kernel Driver           False       Manual      Stopped
            OK          Ignore      False       False
tdnetb      TDNETB      c:\winnt\system32\drivers\tdnetb.sys
            Kernel Driver           False       Manual      Stopped
            OK          Ignore      False       False
tdpipe      TDPIPE      c:\winnt\system32\drivers\tdpipe.sys
            Kernel Driver           False       Manual      Stopped
            OK          Ignore      False       False
tdspx       TDSPX       c:\winnt\system32\drivers\tdspx.sys
            Kernel Driver           False       Manual      Stopped
            OK          Ignore      False       False
tdtcp       TDTCP       c:\winnt\system32\drivers\tdtcp.sys
            Kernel Driver           False       Manual      Stopped
            OK          Ignore      False       False
termdd      Terminal Device Driver
            c:\winnt\system32\drivers\termdd.sys            Kernel
Driver      False       Disabled    Stopped     OK          Normal
            False       False
tga         tga         Not Available           Kernel Driver
            False       System      Stopped     OK          Ignore
            False       False
udfs        Udfs        c:\winnt\system32\drivers\udfs.sys  File
System Driver           False       Disabled    Stopped     OK
            Normal      False       False
ultra66     ultra66     Not Available           Kernel Driver
            False       Disabled    Stopped     OK          Normal
            False       False
update      Microcode Update Driver
            c:\winnt\system32\drivers\update.sys            Kernel
Driver      True        Manual      Running     OK          Normal
            False       True
usbhub      Microsoft USB Standard Hub Driver
            c:\winnt\system32\drivers\usbhub.sys            Kernel
Driver      True        Manual      Running     OK          Normal
            False       True
vgasave     VgaSave     c:\winnt\system32\drivers\vga.sys   Kernel
Driver      True        System      Running     OK          Ignore
            False       True
wanarp      Remote Access IP ARP Driver
            c:\winnt\system32\drivers\wanarp.sys            Kernel
Driver      True        Manual      Running     OK          Normal
            False       True
wdica       WDICA       Not Available           Kernel Driver
            False       Manual      Stopped     OK          Ignore
            False       False

[Environment Variables]

Variable    Value       User Name
ComSpec     %SystemRoot%\system32\cmd.exe
            <SYSTEM>
Os2LibPath              %SystemRoot%\system32\os2\dll;
            <SYSTEM>
Path
            %SystemRoot%\system32;%SystemRoot%;%SystemRoo
t%\System32\Wbem;C:\Program Files\Microsoft SQL
Server\80\Tools\BINN;C:\Program Files\Common Files\Network
Associates\VirusScan Engine\4.0.xx\             <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
            CL03\Administrator
TMP         %USERPROFILE%\Local Settings\Temp
            CL03\Administrator

[Jobs]

[ Following are sub-categories of this main category ]

[Print]

Document    Size        Owner       Notify      Status      Time
Submitted   Start Time  Until Time  Elapsed Time            Pages
Printed     Job ID      Priority    Parameters              Driver
Name        Print Processor         Host Print Queue        Data Type
            Name
No print jobs

[Network Connections]

Local Name              Remote Name             Type        Status
            User Name
E:          \\cl01\c$   Disk        OK          CL03\Administrator

[Running Tasks]

Name        Path        Process ID  Priority    Min Working Set
            Max Working Set         Start Time  Version     Size
            File Date
system idle process     Not Available           0           0
            Not Available           Not Available           Not
Available   Unknown     Unknown     Unknown
system      Not Available           8           8           0
            1413120     Not Available           Unknown     Unknown
            Unknown
smss.exe    c:\winnt\system32\smss.exe          164         11
            204800      1413120     3/25/2003 6:13:52 PM
            5.00.2195.2901          44.27 KB (45,328 bytes)
            12/8/1999 5:00:00 AM
csrss.exe   Not Available           188         13          Not
Available   Not Available           3/25/2003 6:13:56 PM    Unknown
            Unknown     Unknown
winlogon.exe            c:\winnt\system32\winlogon.exe      184
            13          204800      1413120     3/25/2003 6:13:57 PM
            5.00.2195.2953          173.77 KB (177,936 bytes)
            12/8/1999 5:00:00 AM
services.exe            c:\winnt\system32\services.exe      236
            9           204800      1413120     3/25/2003 6:13:58 PM
            5.00.2195.2780          86.77 KB (88,848 bytes)
            12/8/1999 5:00:00 AM
lsass.exe   c:\winnt\system32\lsass.exe         248         9
            204800      1413120     3/25/2003 6:13:58 PM
            5.00.2195.2964          32.77 KB (33,552 bytes)
            12/8/1999 5:00:00 AM
svchost.exe             c:\winnt\system32\svchost.exe       424
            8           204800      1413120     3/25/2003 6:14:02 PM
            5.00.2134.1             7.77 KB (7,952 bytes)   12/8/1999
5:00:00 AM
spoolsv.exe             c:\winnt\system32\spoolsv.exe       456
            8           204800      1413120     3/25/2003 6:14:03 PM
            5.00.2161.1             43.77 KB (44,816 bytes)
            5/9/2002 11:04:37 PM
msdtc.exe   c:\winnt\system32\msdtc.exe         484         8
            204800      1413120     3/25/2003 6:14:03 PM
            1999.9.3421.3           6.77 KB (6,928 bytes)   5/9/2002
11:12:24 PM
svchost.exe             c:\winnt\system32\svchost.exe       616
            8           204800      1413120     3/25/2003 6:14:06 PM
            5.00.2134.1             7.77 KB (7,952 bytes)   12/8/1999
5:00:00 AM
llssrv.exe  c:\winnt\system32\llssrv.exe        636         9
            204800      1413120     3/25/2003 6:14:06 PM
            5.00.2195.2649          114.27 KB (117,008 bytes)
            5/4/2001 12:05:02 PM
regsvc.exe  c:\winnt\system32\regsvc.exe        700         8
            204800      1413120     3/25/2003 6:14:06 PM
            5.00.2195.2104          65.27 KB (66,832 bytes)
            5/9/2002 2:46:32 PM
rsys.exe    Not Available           760         8           Not
Available   Not Available           3/25/2003 6:14:08 PM    Unknown
            Unknown     Unknown
mstask.exe  c:\winnt\system32\mstask.exe        788         8
            204800      1413120     3/25/2003 6:14:17 PM
            4.71.2195.1             115.27 KB (118,032 bytes)
            5/9/2002 2:46:27 PM
winmgmt.exe             c:\winnt\system32\wbem\winmgmt.exe
            832         8           204800      1413120     3/25/2003
6:14:17 PM              1.50.1085.0029          192.08 KB (196,685
bytes)      5/9/2002 2:46:40 PM
inetinfo.exe            c:\winnt\system32\inetsrv\inetinfo.exe   868
```

8 204800 1413120 3/25/2003 6:14:17 PM
5.00.0984 14.27 KB (14,608 bytes) 5/9/2002
2:47:21 PM
dfssvc.exe c:\winnt\system32\dfssvc.exe 904 8
204800 1413120 3/25/2003 6:14:18 PM
5.00.2195.2841 88.27 KB (90,384 bytes)
5/9/2002 2:46:18 PM
svchost.exe c:\winnt\system32\svchost.exe 1088
8 204800 1413120 3/25/2003 6:14:59 PM
5.00.2134.1 7.77 KB (7,952 bytes) 12/8/1999
5:00:00 AM
dllhost.exe Not Available 1116 8 Not
Available Not Available 3/25/2003 6:16:54 PM Unknown
Unknown Unknown
explorer.exe c:\winnt\explorer.exe 1644 8
204800 1413120 3/28/2003 5:05:41 PM
5.00.3315.2846 237.27 KB (242,960 bytes)
5/9/2002 2:46:37 PM
mmc.exe c:\winnt\system32\mmc.exe 1728 8
204800 1413120 3/28/2003 5:06:05 PM
5.00.2195.2301 589.27 KB (603,408 bytes)
5/9/2002 2:46:23 PM
rsvp.exe c:\winnt\system32\rsvp.exe 1848 8
204800 1413120 3/28/2003 5:07:09 PM
5.00.2167.1 172.77 KB (176,912 bytes)
12/8/1999 5:00:00 AM

[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 AM 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 AM Microsoft Corporation
c:\winnt\system32\rsvp.exe
wbemprox.dll 1.50.1085.0045 40.08 KB (41,040
bytes) 5/9/2002 2:46:40 PM Microsoft Corporation
c:\winnt\system32\wbem\wbemprox.dll
mlang.dll 5.00.3103.1000 510.77 KB (523,024 bytes)
5/9/2002 2:46:23 PM 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 AM Microsoft Corporation
c:\winnt\system32\cabinet.dll
msinfo32.dll 5.00.2177.1 312.27 KB (319,760
bytes) 5/9/2002 2:14:22 PM Microsoft Corporation c:\program
files\common files\microsoft shared\msinfo\msinfo32.dll
mmcndmgr.dll 5.00.2178.1 815.27 KB (834,832
bytes) 12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\mmcndmgr.dll
mmc.exe 5.00.2195.2301 589.27 KB (603,408 bytes)
5/9/2002 2:46:23 PM Microsoft Corporation
c:\winnt\system32\mmc.exe
shdoclc.dll 5.00.3315.2879 324.50 KB (332,288 bytes)
5/9/2002 2:46:33 PM Microsoft Corporation
c:\winnt\system32\shdoclc.dll
msi.dll 2.0.2600.0 1.90 MB (1,991,168 bytes) 5/9/2002
2:46:25 PM Microsoft Corporation
c:\winnt\system32\msi.dll
wininet.dll 5.00.3315.1000 456.77 KB (467,728 bytes)
5/9/2002 2:46:36 PM 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 AM Microsoft Corporation
c:\winnt\system32\linkinfo.dll
powrprof.dll 5.00.3103.1000 13.27 KB (13,584
bytes) 5/9/2002 2:46:31 PM Microsoft Corporation
c:\winnt\system32\powrprof.dll
batmeter.dll 5.00.3103.1000 20.27 KB (20,752
bytes) 5/9/2002 2:46:15 PM Microsoft Corporation
c:\winnt\system32\batmeter.dll
stobject.dll 5.00.2195.2780 79.27 KB (81,168 bytes)
5/9/2002 2:46:35 PM Microsoft Corporation
c:\winnt\system32\stobject.dll
webcheck.dll 5.00.3315.1000 251.77 KB (257,808
bytes) 5/9/2002 2:46:36 PM Microsoft Corporation
c:\winnt\system32\webcheck.dll
ntshrui.dll 5.00.2134.1 46.77 KB (47,888 bytes)
12/8/1999 5:00:00 AM 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 AM Microsoft Corporation
c:\winnt\system32\mydocs.dll
browseui.dll 5.00.3315.2846 788.77 KB (807,696
bytes) 5/9/2002 2:46:15 PM Microsoft Corporation
c:\winnt\system32\browseui.dll
shdocvw.dll 5.00.3315.2879 1.05 MB (1,104,144
bytes) 5/9/2002 2:46:33 PM Microsoft Corporation
c:\winnt\system32\shdocvw.dll
explorer.exe 5.00.3315.2846 237.27 KB (242,960
bytes) 5/9/2002 2:46:37 PM Microsoft Corporation
c:\winnt\explorer.exe
tapisrv.dll 5.00.2195.2955 169.27 KB (173,328 bytes)
5/9/2002 2:46:35 PM Microsoft Corporation
c:\winnt\system32\tapisrv.dll
dfssvc.exe 5.00.2195.2841 88.27 KB (90,384 bytes)
5/9/2002 2:46:18 PM Microsoft Corporation
c:\winnt\system32\dfssvc.exe
tpcc_com_all.dll 1, 0, 0, 1 80.00 KB (81,920 bytes)
5/9/2002 8:59:37 PM
c:\inetpub\wwwroot\tpcc_c~2.dll
dbnetlib.dll 2000.080.0528.00 84.08 KB (86,097 bytes)
5/9/2002 7:46:09 PM Microsoft Corporation
c:\winnt\system32\dbnetlib.dll
ntwdblib.dll 2000.080.0194.00 268.06 KB (274,489 bytes)
5/9/2002 2:58:49 PM Microsoft Corporation
c:\winnt\system32\ntwdblib.dll
tpcc_dblib.dll Not Available 28.00 KB (28,672
bytes) 5/9/2002 8:59:36 PM Not Available
c:\inetpub\wwwroot\tpcc_dblib.dll
tpcc_com.dll Not Available 24.00 KB (24,576
bytes) 5/9/2002 8:59:37 PM Not Available
c:\inetpub\wwwroot\tpcc_com.dll
tpcc.dll 0, 4, 0, 0 92.00 KB (94,208 bytes) 5/9/2002
8:59:35 PM Microsoft c:\inetpub\wwwroot\tpcc.dll
mfc42.dll 6.00.8665.0 972.05 KB (995,383 bytes)
12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\mfc42.dll
wam.dll 5.00.0984 70.77 KB (72,464 bytes) 5/9/2002
2:47:23 PM Microsoft Corporation
c:\winnt\system32\inetsrv\wam.dll
odbcint.dll 3.520.7926.0 88.00 KB (90,112 bytes)
5/9/2002 7:46:00 PM Microsoft Corporation
c:\winnt\system32\odbcint.dll
odbc32.dll 3.520.7926.0 216.27 KB (221,456 bytes)
5/9/2002 7:46:00 PM Microsoft Corporation
c:\winnt\system32\odbc32.dll
comsvcs.dll 2000.2.3471.1 1.35 MB (1,417,488
bytes) 5/9/2002 2:46:17 PM Microsoft Corporation
c:\winnt\system32\comsvcs.dll
iislog.dll 5.00.0984 75.27 KB (77,072 bytes) 5/9/2002
2:47:21 PM Microsoft Corporation
c:\winnt\system32\inetsrv\iislog.dll
ntlsapi.dll 5.00.2134.1 6.77 KB (6,928 bytes) 12/8/1999
5:00:00 AM Microsoft Corporation
c:\winnt\system32\ntlsapi.dll
httpext.dll 0.9.3940.21 435.27 KB (445,712 bytes)
5/9/2002 2:47:21 PM Microsoft Corporation
c:\winnt\system32\inetsrv\httpext.dll
md5filt.dll 5.00.0984 32.77 KB (33,552 bytes) 5/9/2002
2:47:22 PM Microsoft Corporation
c:\winnt\system32\inetsrv\md5filt.dll
gzip.dll 5.00.0984 30.27 KB (30,992 bytes) 5/9/2002
2:47:21 PM Microsoft Corporation
c:\winnt\system32\inetsrv\gzip.dll
compfilt.dll 5.00.0984 22.77 KB (23,312 bytes) 5/9/2002
2:47:20 PM Microsoft Corporation
c:\winnt\system32\inetsrv\compfilt.dll
sspifilt.dll 5.00.0984 43.27 KB (44,304 bytes) 5/9/2002
2:47:23 PM Microsoft Corporation
c:\winnt\system32\inetsrv\sspifilt.dll
iscomlog.dll 5.00.0984 24.77 KB (25,360 bytes)
5/9/2002 2:47:22 PM Microsoft Corporation
c:\winnt\system32\inetsrv\iscomlog.dll
lonsint.dll 5.00.0984 11.77 KB (12,048 bytes) 5/9/2002
2:47:22 PM Microsoft Corporation
c:\winnt\system32\inetsrv\lonsint.dll
inetsloc.dll 5.00.0984 20.27 KB (20,752 bytes) 5/9/2002
2:46:21 PM Microsoft Corporation
c:\winnt\system32\inetsloc.dll
iisfecnv.dll 5.00.0984 7.27 KB (7,440 bytes) 5/9/2002 2:38:21 PM
Microsoft Corporation
c:\winnt\system32\inetsrv\iisfecnv.dll
isatq.dll 5.00.0984 60.27 KB (61,712 bytes) 5/9/2002
2:47:22 PM Microsoft Corporation
c:\winnt\system32\inetsrv\isatq.dll
infocomm.dll 5.00.0984 238.27 KB (243,984 bytes)
5/9/2002 2:47:21 PM Microsoft Corporation
c:\winnt\system32\inetsrv\infocomm.dll
w3svc.dll 5.00.0984 343.27 KB (351,504 bytes) 5/9/2002
2:47:23 PM Microsoft Corporation
c:\winnt\system32\inetsrv\w3svc.dll
security.dll 5.00.2154.1 5.77 KB (5,904 bytes) 12/8/1999
5:00:00 AM Microsoft Corporation
c:\winnt\system32\security.dll
svcext.dll 5.00.0984 39.77 KB (40,720 bytes) 5/9/2002
2:47:23 PM Microsoft Corporation
c:\winnt\system32\inetsrv\svcext.dll
admexs.dll 5.00.0984 27.77 KB (28,432 bytes) 5/9/2002
2:47:20 PM Microsoft Corporation
c:\winnt\system32\inetsrv\admexs.dll
wamreg.dll 5.00.0984 45.77 KB (46,864 bytes) 5/9/2002
2:47:23 PM Microsoft Corporation
c:\winnt\system32\inetsrv\wamreg.dll

metadata.dll 5.00.0984 68.77 KB (70,416 bytes) 5/9/2002 2:47:22 PM Microsoft Corporation c:\winnt\system32\inetsrv\metadata.dll
iismap.dll 5.00.0984 55.77 KB (57,104 bytes) 5/9/2002 2:46:21 PM Microsoft Corporation c:\winnt\system32\iismap.dll
nsepm.dll 5.00.0984 43.27 KB (44,304 bytes) 5/9/2002 2:47:22 PM Microsoft Corporation c:\winnt\system32\inetsrv\nsepm.dll
admwprox.dll 5.00.0984 31.77 KB (32,528 bytes) 5/9/2002 2:38:25 PM Microsoft Corporation c:\winnt\system32\admwprox.dll
coadmin.dll 5.00.0984 39.27 KB (40,208 bytes) 5/9/2002 2:47:20 PM Microsoft Corporation c:\winnt\system32\inetsrv\coadmin.dll
iisadmin.dll 5.00.0984 15.27 KB (15,632 bytes) 5/9/2002 2:47:21 PM Microsoft Corporation c:\winnt\system32\inetsrv\iisadmin.dll
rpcref.dll 5.00.0984 4.27 KB (4,368 bytes) 5/9/2002 2:47:22 PM Microsoft Corporation c:\winnt\system32\inetsrv\rpcref.dll
iisrtl.dll 5.00.0984 119.77 KB (122,640 bytes) 5/9/2002 2:46:21 PM Microsoft Corporation c:\winnt\system32\iisrtl.dll
inetinfo.exe 5.00.0984 14.27 KB (14,608 bytes) 5/9/2002 2:47:21 PM Microsoft Corporation c:\winnt\system32\inetsrv\inetinfo.exe
perfos.dll 5.00.2155.1 21.27 KB (21,776 bytes) 12/8/1999 5:00:00 AM Microsoft Corporation c:\winnt\system32\perfos.dll
wshnetbs.dll 5.00.2134.1 7.77 KB (7,952 bytes) 12/8/1999 5:00:00 AM Microsoft Corporation c:\winnt\system32\wshnetbs.dll
ntmarta.dll 5.00.2195.2862 98.77 KB (101,136 bytes) 5/9/2002 2:46:29 PM Microsoft Corporation c:\winnt\system32\ntmarta.dll
provthrd.dll 1.50.1085.0000 68.07 KB (69,708 bytes) 5/9/2002 2:14:13 PM Microsoft Corporation c:\winnt\system32\wbem\provthrd.dll
ntevt.dll 1.50.1085.0000 192.06 KB (196,669 bytes) 12/8/1999 5:00:00 AM 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 AM 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 AM Microsoft Corporation c:\winnt\system32\wbem\framedyn.dll
cimwin32.dll 1.50.1085.0038 1.02 MB (1,073,232 bytes) 5/9/2002 2:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\cimwin32.dll
wbemsvc.dll 1.50.1085.0007 40.07 KB (41,036 bytes) 5/9/2002 2:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\wbemsvc.dll
wbemess.dll 1.50.1085.0039 364.07 KB (372,804 bytes) 5/9/2002 2:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\wbemess.dll
fastprox.dll 1.50.1085.0037 144.08 KB (147,536 bytes) 5/9/2002 2:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\fastprox.dll
wbemcore.dll 1.50.1085.0036 628.07 KB (643,140 bytes) 5/9/2002 2:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\wbemcore.dll
wbemcomn.dll 1.50.1085.0021 692.07 KB (708,675 bytes) 5/9/2002 2:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\wbemcomn.dll
winmgmt.exe 1.50.1085.0029 192.08 KB (196,685 bytes) 5/9/2002 2:46:40 PM Microsoft Corporation c:\winnt\system32\wbem\winmgmt.exe
msidle.dll 5.00.2920.0000 6.27 KB (6,416 bytes) 12/8/1999 5:00:00 AM Microsoft Corporation c:\winnt\system32\msidle.dll
mstask.exe 4.71.2195.1 115.27 KB (118,032 bytes) 5/9/2002 2:46:27 PM Microsoft Corporation c:\winnt\system32\mstask.exe
regsvc.exe 5.00.2195.2104 65.27 KB (66,832 bytes) 5/9/2002 2:46:32 PM 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 AM 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 PM Microsoft Corporation c:\winnt\system32\llssrv.exe
wmi.dll 5.00.2191.1 6.27 KB (6,416 bytes) 12/8/1999 5:00:00 AM Microsoft Corporation c:\winnt\system32\wmi.dll
netshell.dll 5.00.2195.2779 457.27 KB (468,240 bytes) 5/9/2002 2:46:29 PM Microsoft Corporation c:\winnt\system32\netshell.dll
netman.dll 5.00.2195.2779 89.27 KB (91,408 bytes) 5/9/2002 2:46:28 PM Microsoft Corporation c:\winnt\system32\netman.dll
rasdlg.dll 5.00.2195.2671 514.27 KB (526,608 bytes) 12/8/1999 5:00:00 AM Microsoft Corporation c:\winnt\system32\rasdlg.dll
netcfgx.dll 5.00.2195.2228 534.77 KB (547,600 bytes) 5/9/2002 2:46:28 PM Microsoft Corporation c:\winnt\system32\netcfgx.dll
rasmans.dll 5.00.2195.2728 147.27 KB (150,800 bytes) 5/9/2002 2:46:32 PM Microsoft Corporation c:\winnt\system32\rasmans.dll
ntmsdba.dll 5.00.2195.2779 167.27 KB (171,280 bytes) 5/9/2002 2:46:30 PM 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 AM Microsoft Corporation c:\winnt\system32\sens.dll
ntmssvc.dll 5.00.2195.2779 391.27 KB (400,656 bytes) 5/9/2002 2:46:30 PM Microsoft Corporation c:\winnt\system32\ntmssvc.dll
es.dll 2000.2.3471.1 222.27 KB (227,600 bytes) 5/9/2002 2:46:19 PM Microsoft Corporation c:\winnt\system32\es.dll
mtxoci.dll 2000.2.3471.1 101.77 KB (104,208 bytes) 5/9/2002 2:46:28 PM Microsoft Corporation c:\winnt\system32\mtxoci.dll
resutils.dll 5.00.2195.2787 39.77 KB (40,720 bytes) 5/9/2002 2:46:32 PM Microsoft Corporation c:\winnt\system32\resutils.dll
clusapi.dll 5.00.2195.2104 54.27 KB (55,568 bytes) 5/9/2002 2:46:17 PM Microsoft Corporation c:\winnt\system32\clusapi.dll
msvcp50.dll 5.00.7051 552.50 KB (565,760 bytes) 12/8/1999 5:00:00 AM Microsoft Corporation c:\winnt\system32\msvcp50.dll
xolehlp.dll 1999.9.3421.3 17.27 KB (17,680 bytes) 5/9/2002 11:12:25 PM Microsoft Corporation c:\winnt\system32\xolehlp.dll
msdtclog.dll 1999.9.3421.3 89.77 KB (91,920 bytes) 5/9/2002 11:12:24 PM Microsoft Corporation c:\winnt\system32\msdtclog.dll
mtxclu.dll 2000.2.3471.1 51.27 KB (52,496 bytes) 5/9/2002 2:46:28 PM Microsoft Corporation c:\winnt\system32\mtxclu.dll
msdtcprx.dll 2000.2.3471.1 665.77 KB (681,744 bytes) 5/9/2002 2:46:24 PM Microsoft Corporation c:\winnt\system32\msdtcprx.dll
txfaux.dll 2000.2.3471.1 374.27 KB (383,248 bytes) 5/9/2002 2:46:35 PM Microsoft Corporation c:\winnt\system32\txfaux.dll
msdtctm.dll 2000.2.3471.1 1.07 MB (1,120,528 bytes) 5/9/2002 2:46:24 PM Microsoft Corporation c:\winnt\system32\msdtctm.dll
msdtc.exe 1999.9.3421.3 6.77 KB (6,928 bytes) 5/9/2002 11:12:24 PM Microsoft Corporation c:\winnt\system32\msdtc.exe
inetpp.dll 5.00.2195.2842 65.27 KB (66,832 bytes) 5/9/2002 2:46:21 PM 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 AM Microsoft Corporation c:\winnt\system32\win32spl.dll
usbmon.dll 5.00.2195.2780 11.27 KB (11,536 bytes) 5/9/2002 2:46:35 PM Microsoft Corporation c:\winnt\system32\usbmon.dll
tcpmon.dll 5.00.2195.2780 40.77 KB (41,744 bytes) 5/9/2002 2:46:35 PM 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 AM 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 AM 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 AM Microsoft Corporation c:\winnt\system32\localspl.dll
spoolss.dll 5.00.2161.1 61.77 KB (63,248 bytes) 5/9/2002 11:04:38 PM Microsoft Corporation c:\winnt\system32\spoolss.dll
spoolsv.exe 5.00.2161.1 43.77 KB (44,816 bytes) 5/9/2002 11:04:37 PM Microsoft Corporation c:\winnt\system32\spoolsv.exe
rpcss.dll 5.00.2195.2815 231.27 KB (236,816 bytes) 5/9/2002 2:46:32 PM 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 AM Microsoft Corporation c:\winnt\system32\svchost.exe
dssenh.dll 5.00.2195.2228 142.77 KB (146,192 bytes) 5/9/2002 2:47:16 PM Microsoft Corporation c:\winnt\system32\dssenh.dll
oakley.dll 5.00.2195.2785 378.77 KB (387,856 bytes) 5/9/2002 2:46:30 PM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\polagent.dll
scecli.dll 5.00.2195.2780 105.27 KB (107,792 bytes)
5/9/2002 2:46:33 PM Microsoft Corporation
c:\winnt\system32\scecli.dll
atl.dll 3.00.8449 57.56 KB (58,938 bytes) 12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\atl.dll
certcli.dll 5.00.2195.2778 130.77 KB (133,904 bytes)
5/9/2002 2:46:16 PM Microsoft Corporation
c:\winnt\system32\certcli.dll
esent.dll 6.0.3940.13 1.08 MB (1,135,376 bytes)
5/9/2002 2:46:19 PM Microsoft Corporation
c:\winnt\system32\esent.dll
ntdsatq.dll 5.00.2195.2878 31.27 KB (32,016 bytes)
5/9/2002 2:46:29 PM Microsoft Corporation
c:\winnt\system32\ntdsatq.dll
ntdsa.dll 5.00.2195.2899 990.77 KB (1,014,544 bytes)
5/9/2002 2:46:29 PM Microsoft Corporation
c:\winnt\system32\ntdsa.dll
kdcsvc.dll 5.00.2195.2878 137.77 KB (141,072 bytes)
5/9/2002 2:46:22 PM 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 AM Microsoft Corporation
c:\winnt\system32\sfmapi.dll
rassfm.dll 5.00.2195.2671 21.27 KB (21,776 bytes)
5/9/2002 2:46:32 PM Microsoft Corporation
c:\winnt\system32\rassfm.dll
rsabase.dll 5.00.2195.2228 128.27 KB (131,344 bytes)
5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\rsabase.dll
schannel.dll 5.00.2195.2922 138.27 KB (141,584 bytes) 5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\schannel.dll
netlogon.dll 5.00.2195.2865 357.77 KB (366,352 bytes) 5/9/2002 2:46:28 PM 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 AM Microsoft Corporation
c:\winnt\system32\msv1_0.dll
kerberos.dll 5.00.2195.2913 198.77 KB (203,536 bytes) 5/9/2002 2:46:22 PM 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 AM 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 AM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\lsass.exe
xactsrv.dll 5.00.2134.1 90.27 KB (92,432 bytes)
12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\xactsrv.dll
wmicore.dll 5.00.2195.2842 72.27 KB (74,000 bytes)
5/9/2002 2:46:37 PM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\winrnr.dll
rnr20.dll 5.00.2195.2871 35.77 KB (36,624 bytes)
5/9/2002 2:46:32 PM Microsoft Corporation
c:\winnt\system32\rnr20.dll
wshtcpip.dll 5.00.2195.2104 17.27 KB (17,680 bytes) 5/9/2002 2:46:37 PM Microsoft Corporation
c:\winnt\system32\wshtcpip.dll
msafd.dll 5.00.2195.2779 106.77 KB (109,328 bytes)
5/9/2002 2:46:23 PM Microsoft Corporation
c:\winnt\system32\msafd.dll
mswsock.dll 5.00.2195.2871 62.77 KB (64,272 bytes) 5/9/2002 2:46:27 PM 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 AM Microsoft Corporation
c:\winnt\system32\msgsvc.dll
browser.dll 5.00.2195.2778 48.27 KB (49,424 bytes)
5/9/2002 2:46:15 PM 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 AM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\seclogon.dll
psbase.dll 5.00.2195.2779 111.77 KB (114,448 bytes)
5/9/2002 2:46:32 PM 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 AM 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 AM 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 AM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\cfgmgr32.dll
dmserver.dll 2195.2778.297.3 11.77 KB (12,048 bytes) 5/9/2002 2:46:18 PM VERITAS Software Corp.
c:\winnt\system32\dmserver.dll
winsta.dll 5.00.2195.2386 36.77 KB (37,648 bytes)
5/9/2002 2:46:36 PM 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 AM Microsoft Corporation
c:\winnt\system32\lmhsvc.dll
dnsrslvr.dll 5.00.2195.2778 88.77 KB (90,896 bytes)
5/9/2002 2:46:18 PM 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 AM 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 AM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\rtutils.dll
adsldpc.dll 5.00.2195.2842 127.27 KB (130,320 bytes)
5/9/2002 2:46:14 PM Microsoft Corporation
c:\winnt\system32\adsldpc.dll
activeds.dll 5.00.2195.2778 174.77 KB (178,960 bytes)
5/9/2002 2:46:10 PM 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 AM 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 AM 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 AM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\eventlog.dll
ntdsapi.dll 5.00.2195.2661 55.77 KB (57,104 bytes)
5/9/2002 2:46:29 PM Microsoft Corporation
c:\winnt\system32\ntdsapi.dll
scesrv.dll 5.00.2195.2780 226.27 KB (231,696 bytes)
5/9/2002 2:46:33 PM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\services.exe
clbcatq.dll 2000.2.3471.1 496.77 KB (508,688 bytes)
5/9/2002 2:46:16 PM Microsoft Corporation
c:\winnt\system32\clbcatq.dll
oleaut32.dll 2.40.4517 612.27 KB (626,960 bytes)
12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\oleaut32.dll
netmsg.dll 5.00.2137.1 152.50 KB (156,160 bytes)
12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\netmsg.dll
comdlg32.dll 5.00.3103.1000 236.77 KB (242,448 bytes) 12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\comdlg32.dll
netui2.dll 5.00.2134.1 280.27 KB (286,992 bytes)

12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\netui2.dll
mprui.dll 5.00.2195.2104 54.77 KB (56,080 bytes)
5/9/2002 2:46:23 PM Microsoft Corporation
c:\winnt\system32\mprui.dll
netui1.dll 5.00.2134.1 210.27 KB (215,312 bytes)
12/8/1999 5:00:00 AM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\ntlanman.dll
mpr.dll 5.00.2195.2779 53.27 KB (54,544 bytes)
5/9/2002 2:46:23 PM Microsoft Corporation
c:\winnt\system32\mpr.dll
cscui.dll 5.00.2195.2959 228.27 KB (233,744 bytes)
5/9/2002 2:46:17 PM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\winscard.dll
wlnotify.dll 5.00.2195.2780 53.77 KB (55,056 bytes)
5/9/2002 2:46:37 PM Microsoft Corporation
c:\winnt\system32\wlnotify.dll
cscdll.dll 5.00.2195.2401 98.27 KB (100,624 bytes)
5/9/2002 2:46:17 PM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\version.dll
rsaenh.dll 5.00.2195.2228 130.77 KB (133,904 bytes)
5/9/2002 2:47:16 PM 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 AM Microsoft Corporation
c:\winnt\system32\mscat32.dll
ole32.dll 5.00.2195.2887 969.77 KB (993,040 bytes)
5/9/2002 2:46:31 PM Microsoft Corporation
c:\winnt\system32\ole32.dll
imagehlp.dll 5.00.2195.2778 125.77 KB (128,784 bytes) 5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\imagehlp.dll
msasn1.dll 5.00.2134.1 51.27 KB (52,496 bytes)
12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\msasn1.dll
crypt32.dll 5.131.2195.2833 451.27 KB (462,096 bytes)
5/9/2002 2:46:17 PM Microsoft Corporation
c:\winnt\system32\crypt32.dll
wintrust.dll 5.131.2195.2779 162.27 KB (166,160 bytes)
5/9/2002 2:46:36 PM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\winmm.dll
comctl32.dll 5.81 537.77 KB (550,672 bytes)
12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\comctl32.dll
shlwapi.dll 5.00.3315.1000 282.77 KB (289,552 bytes)
5/9/2002 2:46:34 PM Microsoft Corporation
c:\winnt\system32\shlwapi.dll
shell32.dll 5.00.3315.2902 2.25 MB (2,359,056 bytes)
5/9/2002 2:46:34 PM 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 AM Microsoft Corporation
c:\winnt\system32\msgina.dll
wsock32.dll 5.00.2195.2871 21.27 KB (21,776 bytes) 5/9/2002 2:46:37 PM Microsoft Corporation
c:\winnt\system32\wsock32.dll
dnsapi.dll 5.00.2195.2785 130.77 KB (133,904 bytes)
5/9/2002 2:46:18 PM Microsoft Corporation
c:\winnt\system32\dnsapi.dll
wldap32.dll 5.00.2195.2797 125.27 KB (128,272 bytes)
5/9/2002 2:46:37 PM 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 AM Microsoft Corporation
c:\winnt\system32\ws2help.dll
ws2_32.dll 5.00.2195.2780 67.77 KB (69,392 bytes)
5/9/2002 2:46:37 PM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\netrap.dll
netapi32.dll 5.00.2195.2808 303.77 KB (311,056 bytes) 5/9/2002 2:46:28 PM 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 AM Microsoft Corporation
c:\winnt\system32\profmap.dll
secur32.dll 5.00.2195.2862 46.77 KB (47,888 bytes)
5/9/2002 2:46:33 PM Microsoft Corporation
c:\winnt\system32\secur32.dll
sfc.dll 5.00.2195.2896 92.11 KB (94,320 bytes)
5/9/2002 2:46:33 PM 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 AM 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 AM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\gdi32.dll
rpcrt4.dll 5.00.2195.2832 437.27 KB (447,760 bytes)
5/9/2002 2:46:32 PM 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 AM 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 AM Microsoft Corporation
c:\winnt\system32\kernel32.dll
msvcrt.dll 6.10.8924.0 284.05 KB (290,869 bytes)
5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\msvcrt.dll
winlogon.exe 5.00.2195.2953 173.77 KB (177,936 bytes) 12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\winlogon.exe
sfcfiles.dll 5.00.2195.2967 948.27 KB (971,024 bytes)
5/9/2002 2:46:33 PM Microsoft Corporation
c:\winnt\system32\sfcfiles.dll
ntdll.dll 5.00.2195.2779 478.77 KB (490,256 bytes)
5/4/2001 12:05:02 PM Microsoft Corporation
c:\winnt\system32\ntdll.dll
smss.exe 5.00.2195.2901 44.27 KB (45,328 bytes)
12/8/1999 5:00:00 AM Microsoft Corporation
c:\winnt\system32\smss.exe

[Services]

Display Name Name State Start Mode Service Type Path Error Control Start NameTag ID
Alerter Alerter Running Auto Share Process
c:\winnt\system32\services.exe Normal
LocalSystem 0
Application Management AppMgmt Stopped Manual
Share Process c:\winnt\system32\services.exe
Normal LocalSystem 0
Computer Browser Browser Running Auto Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
Indexing Service cisvc Stopped Manual Share
Process c:\winnt\system32\cisvc.exe Normal
LocalSystem 0
ClipBook ClipSrv Stopped Manual Own Process
c:\winnt\system32\clipsrv.exe Normal
LocalSystem 0
Distributed File System Dfs Running Auto
Own Process c:\winnt\system32\dfssvc.exe
Normal LocalSystem 0
DHCP Client Dhcp Running Auto Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
Logical Disk Manager Administrative Service dmadmin Stopped
Manual Share Process
c:\winnt\system32\dmadmin.exe /com Normal
LocalSystem 0
Logical Disk Manager dmserver Running Auto Share
Process c:\winnt\system32\services.exe Normal
LocalSystem 0
DNS Client Dnscache Running Auto Share Process
c:\winnt\system32\services.exe Normal
LocalSystem 0
Event Log Eventlog Running Auto Share Process
c:\winnt\system32\services.exe Normal
LocalSystem 0
COM+ Event System EventSystem Running Manual

```
        Share Process   c:\winnt\system32\svchost.exe -k
netsvcs Normal  LocalSystem     0
Fax Service     Fax     Stopped Manual  Own
Process c:\winnt\system32\faxsvc.exe    Normal
        LocalSystem     0
IIS Admin Service       IISADMIN        Running Auto    Share
Process c:\winnt\system32\inetsrv\inetinfo.exe  Normal
        LocalSystem     0
Intersite Messaging     IsmServ Stopped Disabled        Own
Process c:\winnt\system32\ismserv.exe   Normal
        LocalSystem     0
Kerberos Key Distribution Center        kdc     Stopped Disabled
        Share Process   c:\winnt\system32\lsass.exe
        Normal  LocalSystem     0
Server  lanmanserver    Running Auto    Share
Process c:\winnt\system32\services.exe  Normal
        LocalSystem     0
Workstation     lanmanworkstation       Running Auto
        Share Process   c:\winnt\system32\services.exe
        Normal  LocalSystem     0
License Logging Service         LicenseService          Running
        Auto    Own Process
        c:\winnt\system32\llssrv.exe    Normal
        LocalSystem     0
TCP/IP NetBIOS Helper Service   LmHosts Running Auto
        Share Process   c:\winnt\system32\services.exe
        Normal  LocalSystem     0
Messenger       Messenger       Running Auto    Share Process
        c:\winnt\system32\services.exe  Normal
        LocalSystem     0
NetMeeting Remote Desktop Sharing       mnmsrvc Stopped
        Manual  Own Process
        c:\winnt\system32\mnmsrvc.exe   Normal
        LocalSystem     0
Distributed Transaction Coordinator     MSDTC   Running
        Auto    Own Process
        c:\winnt\system32\msdtc.exe     Normal
        LocalSystem     0
Windows Installer       MSIServer       Stopped Manual  Share
Process c:\winnt\system32\msiexec.exe /v        Normal
        LocalSystem     0
Network DDE     NetDDE  Stopped Manual  Share
Process c:\winnt\system32\netdde.exe    Normal
        LocalSystem     0
Network DDE DSDM        NetDDEdsdm      Stopped Manual
        Share Process   c:\winnt\system32\netdde.exe
        Normal  LocalSystem     0
Net Logon       Netlogon        Stopped Manual  Share Process
        c:\winnt\system32\lsass.exe     Normal
        LocalSystem     0
Network Connections     Netman  Running Manual  Share
Process c:\winnt\system32\svchost.exe -k netsvcs        Normal
        LocalSystem     0
Network News Transport Protocol (NNTP)  NntpSvc Stopped
        Disabled        Share Process
        c:\winnt\system32\inetsrv\inetinfo.exe  Normal
        LocalSystem     0
File Replication        NtFrs   Stopped Manual  Own
Process c:\winnt\system32\ntfrs.exe     Ignore
        LocalSystem     0
NT LM Security Support Provider NtLmSsp Stopped Manual
        Share Process   c:\winnt\system32\lsass.exe
        Normal  LocalSystem     0
Removable Storage       NtmsSvc Running Auto    Share
Process c:\winnt\system32\svchost.exe -k netsvcs        Normal
        LocalSystem     0
Plug and Play   PlugPlay        Running Auto    Share
Process c:\winnt\system32\services.exe  Normal
        LocalSystem     0
IPSEC Policy Agent      PolicyAgent     Running Auto
        Share Process   c:\winnt\system32\lsass.exe
        Normal  LocalSystem     0
Protected Storage       ProtectedStorage        Running Auto
        Share Process   c:\winnt\system32\services.exe
        Normal  LocalSystem     0
PsShutdown      PsShutdownSvc   Stopped Manual
        Own Process     c:\winnt\system32\pssdnsvc.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 Command Service  RMSYS   Running Auto
        Own Process     c:\benchcraft\rsys.exe  Normal
        .\Administrator 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 CardSCardSvr      Stopped Manual  Share Process
        c:\winnt\system32\scardsvr.exe  Ignore
        LocalSystem     0
Task Scheduler  Schedule        Running Auto    Share
Process c:\winnt\system32\mstask.exe    Normal
        LocalSystem     0
RunAs Service   seclogon        Running Auto    Share
Process c:\winnt\system32\services.exe  Ignore
        LocalSystem     0
System Event Notification       SENS    Running Auto
        Share Process   c:\winnt\system32\svchost.exe -k
netsvcs Normal  LocalSystem     0
Internet Connection Sharing     SharedAccess    Stopped
        Manual  Share Process
        c:\winnt\system32\svchost.exe -k netsvcs        Normal
        LocalSystem     0
Simple Mail Transport Protocol (SMTP)   SMTPSVC Stopped
        Disabled        Share Process
        c:\winnt\system32\inetsrv\inetinfo.exe  Normal
        LocalSystem     0
Print Spooler   Spooler Running Auto    Own
Process c:\winnt\system32\spoolsv.exe   Normal
        LocalSystem     0
Performance Logs and Alerts     SysmonLog       Stopped
        Manual  Own Process
        c:\winnt\system32\smlogsvc.exe  Normal
        LocalSystem     0
Telephony       TapiSrv Running Manual  Share Process
        c:\winnt\system32\svchost.exe -k tapisrv        Normal
        LocalSystem     0
Terminal Services       TermService     Stopped Disabled
        Own Process     c:\winnt\system32\termsrv.exe
        Normal  LocalSystem     0
Telnet  TlntSvr Stopped Manual  Own Process
        c:\winnt\system32\tlntsvr.exe   Normal
        LocalSystem     0
Distributed Link Tracking Server        TrkSvr  Stopped Manual
        Share Process   c:\winnt\system32\services.exe
        Normal  LocalSystem     0
Distributed Link Tracking Client        TrkWks  Running Auto
        Share Process   c:\winnt\system32\services.exe
        Normal  LocalSystem     0
Uninterruptible Power Supply    UPS     Stopped Manual
        Own Process     c:\winnt\system32\ups.exe
        Normal  LocalSystem     0
Utility Manager UtilMan Stopped Manual  Own
Process c:\winnt\system32\utilman.exe   Normal
        LocalSystem     0
Windows Time    W32Time Stopped Manual  Share
Process c:\winnt\system32\services.exe  Normal
        LocalSystem     0
World Wide Web Publishing Service       W3SVC   Running
        Auto    Share Process
        c:\winnt\system32\inetsrv\inetinfo.exe  Normal
        LocalSystem     0
Windows Management Instrumentation      WinMgmt Running
        Auto    Own Process
        c:\winnt\system32\wbem\winmgmt.exe      Ignore
        LocalSystem     0
Windows Management Instrumentation Driver Extensions    Wmi
        Running Manual  Share Process
        c:\winnt\system32\services.exe  Normal
        LocalSystem     0

[Program Groups]

Group Name      Name    User Name
Accessories     Default User:Accessories        Default
User
Accessories\Accessibility       Default
User:Accessories\Accessibility  Default User
Accessories\Entertainment       Default
User:Accessories\Entertainment  Default User
```

```
Accessories\System Tools        Default User:Accessories\System
Tools   Default User
Startup Default User:Startup    Default User
Accessories             All Users:Accessories  All Users
Accessories\Accessibility       All
Users:Accessories\Accessibility All Users
Accessories\Communications      All
Users:Accessories\Communications        All Users
Accessories\Entertainment       All
Users:Accessories\Entertainment All Users
Accessories\Microsoft Script Debugger   All
Users:Accessories\Microsoft Script Debugger All Users
Accessories\System Tools        All Users:Accessories\System
Tools   All Users
Administrative Tools    All Users:Administrative Tools  All Users
Microsoft SQL Server  All Users:Microsoft SQL Server    All Users
Startup All Users:Startup       All Users
Accessories             CL03\Administrator:Accessories
        CL03\Administrator
Accessories\Accessibility
        CL03\Administrator:Accessories\Accessibility
        CL03\Administrator
Accessories\Entertainment
        CL03\Administrator:Accessories\Entertainment
        CL03\Administrator
Accessories\System Tools
        CL03\Administrator:Accessories\System Tools
        CL03\Administrator
Administrative Tools    CL03\Administrator:Administrative Tools
        CL03\Administrator
Startup CL03\Administrator:Startup      CL03\Administrator

[Startup Programs]

Program Command User NameLocation
No startup program information

[OLE Registration]

Object  Local Server
Sound (OLE2)            sndrec32.exe
Media Clip  mplay32.exe
Video Clip  mplay32.exe /avi
MIDI Sequence           mplay32.exe /mid
Sound   Not Available
Media Clip  Not Available
Image Document  "C:\Program Files\Windows
NT\Accessories\ImageVue\KodakImg.exe"
WordPad Document    "%ProgramFiles%\Windows
NT\Accessories\WORDPAD.EXE"
Windows Media Services DRM Storage objectNot Available
Bitmap Image            C:\WINNT\System32\mspaint.exe

[Internet Explorer 5]

[ Following are sub-categories of this main category ]

[Summary]

Item    Value
Version 5.00.3315.1000
Build   53315.1000
Product ID  51876-335-9534151-05664
Application Path    C:\Program Files\Internet Explorer
Language  English (United States)
Active Printer      Not Available

Cipher Strength     168-bit
Content Advisor     Disabled
IEAK Install        No

[File Versions]

File    Version Size    Date    Path    Company
advapi32.dll            5.0.2195.2867           352 KB  5/4/2001
12:05:02 PM             C:\WINNT\system32       Microsoft Corporation
advpack.dll5.0.3103.1000        87 KB   5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
browselc.dll            5.0.3315.2846           35 KB   5/4/2001
12:05:02 PM             C:\WINNT\system32       Microsoft Corporation
browseui.dll            5.0.3315.2846           789 KB  5/4/2001
12:05:02 PM             C:\WINNT\system32       Microsoft Corporation
ckcnv.exe  5.0.2189.1 9 KB      12/8/1999 5:00:00 AM
        C:\WINNT\system32       Microsoft Corporation
comctl32.dll            5.81.3103.1000          538 KB  5/4/2001
12:05:02 PM             C:\WINNT\system32       Microsoft Corporation
crypt32.dll  5.131.2195.2833    451 KB  5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
enhsig.dll  <File Missing>      Not Available   Not
Available   Not Available       Not Available
iemigrat.dll <File Missing>     Not Available   Not
Available   Not Available       Not Available
iesetup.dll  5.0.3103.1000      57 KB   5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
iexplore.exe        5.0.2920.0 59 KB    12/8/1999 5:00:00 AM
        C:\Program Files\Internet Explorer Microsoft Corporation
imagehlp.dll            5.0.2195.2778           126 KB  5/4/2001
12:05:02 PM             C:\WINNT\system32       Microsoft Corporation
imghelp.dll <File Missing>      Not Available   Not
Available   Not Available       Not Available
inseng.dll  5.0.3103.1000       72 KB   5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
jobexec.dll 5.0.0.1     47 KB   12/8/1999 5:00:00 AM
        C:\WINNT\system32       Microsoft Corporation
jscript.dll  5.1.0.5907 476 KB  5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
jsproxy.dll  5.0.2920.0 13 KB   12/8/1999 5:00:00 AM
        C:\WINNT\system32       Microsoft Corporation
msaahtml.dll            <File Missing>          Not Available
        Not Available           Not Available   Not
Available
mshtml.dll  5.0.3315.2870       2290 KB 5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
msjava.dll  5.0.3802.0 923 KB   5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
msoss.dll  <File Missing>       Not Available   Not
Available   Not Available       Not Available
msxml.dll  8.0.5718.1 493 KB    5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
occache.dll5.0.3103.1000        86 KB   5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
ole32.dll   5.0.2195.2887        970 KB  5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
oleaut32.dll            2.40.4517.0             612 KB  5/4/2001
12:05:02 PM             C:\WINNT\system32       Microsoft Corporation
olepro32.dll            5.0.4517.0 160 KB       5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
rsabase.dll 5.0.2195.2228       128 KB  5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
rsaenh.dll  5.0.2195.2228       131 KB  5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
rsapi32.dll <File Missing>      Not Available   Not
Available   Not Available       Not Available
rsasig.dll  <File Missing>      Not Available   Not
Available   Not Available       Not Available
schannel.dll            5.1.2195.0 138 KB       5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
shdoc401.dll            <File Missing>          Not Available
        Not Available           Not Available   Not
Available
shdocvw.dll             5.0.3315.2879           1078 KB 5/4/2001
12:05:02 PM             C:\WINNT\system32       Microsoft Corporation
shell32.dll  5.0.3315.2902      2304 KB 5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
shlwapi.dll  5.0.3315.1000      283 KB  5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
url.dll     5.0.2920.0 82 KB    12/8/1999 5:00:00 AM
        C:\WINNT\system32       Microsoft Corporation
urlmon.dll  5.0.3315.1000       441 KB  5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
vbscript.dll 5.1.0.5907 428 KB  5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
webcheck.dll            5.0.3315.1000           252 KB  5/4/2001
12:05:02 PM             C:\WINNT\system32       Microsoft Corporation
win.com     5.0.2134.1 24 KB    12/8/1999 5:00:00 AM
        C:\WINNT\system32       Microsoft Corporation
wininet.dll  5.0.3315.1000      457 KB  5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
winsock.dll 3.10.0.103  3 KB    12/8/1999 5:00:00 AM
        C:\WINNT\system32       Microsoft Corporation
wintrust.dll 5.131.2195.2779    162 KB  5/4/2001 12:05:02 PM
        C:\WINNT\system32       Microsoft Corporation
wsock.vxd  <File Missing>       Not Available   Not
Available   Not Available       Not Available
wsock32.dll             5.0.2195.2871           21 KB   5/4/2001
12:05:02 PM             C:\WINNT\system32       Microsoft Corporation
wsock32n.dll            <File Missing>          Not Available
        Not Available           Not Available   Not
Available

[Connectivity]

Item    Value
Connection PreferenceNever dial
EnableHttp1.1   1
ProxyHttp1.1    0

LAN Settings

AutoConfigProxy     wininet.dll
AutoProxyDetectMode Enabled
AutoConfigURL
Proxy   Disabled
ProxyServer
ProxyOverride
```

[Cache]

[Following are sub-categories of this main category]

[Summary]

Item	Value
Page Refresh Type	Automatic
Temporary Internet Files Folder	C:\Documents and Settings\Administrator\Local Settings\Temporary Internet Files
Total Disk Space	8667 MB
Available Disk Space	5833 MB
Maximum Cache Size	270 MB
Available Cache Size	271 MB

[List of Objects]

Program File	Status	CodeBase

No cached object information available

[Content]

[Following are sub-categories of this main category]

[Summary]

Item	Value
Content Advisor	Disabled

[Personal Certificates]

Issued To	Issued By	Validity	Signature Algorithm
Administrator	Administrator	5/9/2002 to 4/15/2102	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™ 2000 setting>

Startup Parameters

sqlservr -c -x -T3502 –g100

-c	Start SQL Server independently of the Microsoft Windows NT Service Control Manager.
-x	Disable the keeping of CPU time and cache-hit ration statistics.
-T3502	Prints a message to the log at the beginning and end of each checkpoint.
-g100	Reserve 100 MB for non-buffer pool allocations

Microsoft SQL Server Stack Size

The default stack size of Microsoft SQL Server 2000 was changed using the EDITBIN utility. The EDITBIN utility is included in the Microsoft Visual C++ package. Following command was used to change the stack size:
editbin /stack: 131072 sqlservr.exe.

Microsoft® SQL Server™ 2000 Configuration Parameters

```
1> 2> 3> 4> 5> 6> 7> 8> --  File:     VERSION.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Extracts current version of SQL Server


use master
1> 2> 3>
SELECT   CONVERT(char(20), SERVERPROPERTY('ProductVersion'))

 --------------------
 8.00.760

(1 row affected)
1> 2> 3>
SELECT   CONVERT(char(20), SERVERPROPERTY('ProductLevel'))

 --------------------
 SP3

(1 row affected)
1> 2> 3>
SELECT   CONVERT(char(30), getdate(),9)

 ------------------------------
 Mar 14 2003  6:12:04:060PM

(1 row affected)
1> 2> 3> 4> 5>



1> 2> 3> 4> 5> 6> 7> 8> 9> 10>
--  File:     CONFIG.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.41
--            Copyright Microsoft, 2001
--  Purpose:  Collects SQL Server configuration parameters


PRINT    " "
SELECT   convert(char(30), getdate(),9)
PRINT    " "

 ------------------------------
 Mar 14 2003  6:12:04:403PM

(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          255
255
 allow updates                                0           1            0
0
 awe enabled                                  0           1            1
1
 c2 audit mode                                0           1            0
0
 cost threshold for parallelism               0       32767            5
5
 Cross DB Ownership Chaining                  0           1            0
0
 cursor threshold                            -1  2147483647           -1          -
1
 default full-text language                   0  2147483647         1033
1033
 default language                             0        9999            0
0
 fill factor (%)                              0         100            0
0
 index create memory (KB)                   704  2147483647            0
0
 lightweight pooling                          0           1            1
1
 locks                                     5000  2147483647         8000
8000
 max degree of parallelism                    0          32            1
1
 max server memory (MB)                       4  2147483647   2147483647
2147483647
 max text repl size (B)                       0  2147483647        65536
65536
 max worker threads                          32       32767          345
345
 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           0
0
 remote login timeout (s)                0  2147483647           0
0
 remote proc trans                       0           1           0
0
 remote query timeout (s)                0  2147483647           0
0
 scan for startup procs                  0           1           0
0
 set working set size                    0           1           0
0
 show advanced options                   0           1           1
1
 two digit year cutoff                1753        9999        2049
2049
 user connections                        0       32767           0
0
 user options                            0       32767           0
0

1>
```

<Disk Array configuration>
Disk configuration: Controller 0 ... 4

```
PHYSICAL PACK INFORMATION :
===========================

Pack  0 : [ 0: 0]  [ 0: 1]  [ 0: 2]  [ 0: 3]  [ 0: 4]  [ 0: 5]  [ 0: 6]  [ 0: 8]  [ 0: 9]  [ 0:10]  [ 0:11]  [ 0:12]
Pack  1 : [ 1: 0]  [ 1: 1]  [ 1: 2]  [ 1: 3]  [ 1: 4]  [ 1: 5]  [ 1: 6]  [ 1: 8]  [ 1: 9]  [ 1:10]  [ 1:11]  [ 1:12]
Pack  2 : [ 2: 0]  [ 2: 1]  [ 2: 2]  [ 2: 3]  [ 2: 4]  [ 2: 5]  [ 2: 6]  [ 2: 8]  [ 2: 9]  [ 2:10]  [ 2:11]  [ 2:12]

SYSTEM DRIVE INFORMATION :
==========================

Number of System Drives =  1

Sys Drv#  Phy. Size(GB) Raid Level  Eff. Size(GB) Write Policy    State
========  ============ ==========  ============ ============   =====
      0       614.531         0       614.531        Thru   Online

PHYSICAL DEVICE INFORMATION
===========================

Chan:Targ Type      Vendor  Model       Version Size(GB) Status
========= ====    ======  =====      ======= ======== ======
  0:  0 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0:  1 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0:  2 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0:  3 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0:  4 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0:  5 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0:  6 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0:  8 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0:  9 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0: 10 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0: 11 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0: 12 Disk      SEAGATE ST318452LC     0002   17.074 Online
  0: 14 Processor NEC     GEM359         1.06    0.000 Unconfigured
  1:  0 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1:  1 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1:  2 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1:  3 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1:  4 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1:  5 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1:  6 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1:  8 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1:  9 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1: 10 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1: 11 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1: 12 Disk      SEAGATE ST318452LC     0002   17.074 Online
  1: 14 Processor NEC     GEM359         1.06    0.000 Unconfigured
  2:  0 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2:  1 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2:  2 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2:  3 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2:  4 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2:  5 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2:  6 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2:  8 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2:  9 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2: 10 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2: 11 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2: 12 Disk      SEAGATE ST318452LC     0002   17.074 Online
  2: 14 Processor NEC     GEM359         1.06    0.000 Unconfigured
```

Disk configuration: Controller 5 (for DB LOG)

```
PHYSICAL PACK INFORMATION :
===========================

Pack  0 : [ 0: 0]  [ 1: 0]
Pack  1 : [ 0: 1]  [ 1: 1]
Pack  2 : [ 0: 2]  [ 1: 2]
Pack  3 : [ 0: 3]  [ 1: 3]
Pack  4 : [ 0: 4]  [ 1: 4]
Pack  5 : [ 0: 5]  [ 1: 5]
Pack  6 : [ 0: 6]  [ 1: 6]

SYSTEM DRIVE INFORMATION :
==========================

Number of System Drives =  1

Sys Drv#  Phy. Size(GB) Raid Level  Eff. Size(GB) Write Policy    State
========  ============ ==========  ============ ============   =====
      0       119.492         1       119.492        Thru   Online

PHYSICAL DEVICE INFORMATION
===========================

Chan:Targ Type      Vendor  Model       Version Size(GB) Status
========= ====    ======  =====      ======= ======== ======
  0:  0 Disk      SEAGATE ST318452LC     0002   17.070 Online
  0:  1 Disk      SEAGATE ST318452LC     0002   17.070 Online
  0:  2 Disk      SEAGATE ST318452LC     0002   17.070 Online
  0:  3 Disk      SEAGATE ST318452LC     0002   17.070 Online
  0:  4 Disk      SEAGATE ST318452LC     0002   17.070 Online
  0:  5 Disk      SEAGATE ST318452LC     0002   17.070 Online
  0:  6 Disk      SEAGATE ST318452LC     0002   17.070 Online
  0: 14 Processor NEC     GEM359         1.06    0.000 Unconfigured
  1:  0 Disk      SEAGATE ST318452LC     0002   17.070 Online
  1:  1 Disk      SEAGATE ST318452LC     0002   17.070 Online
  1:  2 Disk      SEAGATE ST318452LC     0002   17.070 Online
  1:  3 Disk      SEAGATE ST318452LC     0002   17.070 Online
  1:  4 Disk      SEAGATE ST318452LC     0002   17.070 Online
  1:  5 Disk      SEAGATE ST318452LC     0002   17.070 Online
  1:  6 Disk      SEAGATE ST318452LC     0002   17.070 Online
  1: 14 Processor NEC     GEM359         1.06    0.000 Unconfigured
```

Appendix D : Space Calculation

60 Day Space

Note : Numbers are in KBytes unless otherwise specified

Warehouses	5700	tpmC	70653.01	tpmC/W	12.40

Table	Rows	Data	Index	5%Space	8H Space	Total Space
Warehouse	6,000	648	48	35		731
District	60,000	6,672	64	337		7,073
Item	100,000	9,528	72	221		9,821
New-order	54,000,000	853,760	2,304		480,000	1,336,064
History	180,000,000	10,000,008	40		1,563,218	11,563,266
Orders	180,000,000	5,517,248	13,336		864,546	6,395,130
Customer	180,000,000	130,909,096	8,406,104	3,204,250		142,519,450
Order-line	1,799,998,798	112,499,928	280,144		17,629,894	130,409,966
Stock	600,000,000	192,000,008	429,944	4,425,889		196,855,841
Totals		451,796,896	9,132,056	7,630,731	20,537,658	489,097,341

DB File Group	Count	Size	Needed	Overhead	Not Needed
MSSQL_misc_fg	5	296,755,200	151,219,271	1,512,193	144,023,736
MSSQL_cs_fg	5	486,604,800	342,769,043	3,427,690	140,408,066
Totals		783,360,000	493,988,315	4,939,883	284,431,802

Dynamic space	124,560,720	Sum of Data for Order, Order-Line and History (excluding free extents)
Static space	348,938,846	Data + Index + 5%Space + Overhead - Dynamic space
Free space	25,428,632	Total Seg. Size - Dynamic Space - Static Space - Not Needed
Daily growth	23,468,239	(Dynamic space/W* 62.5)* tpmC
Daily spread	-9,773,727	Free space - 1.5 * Daily growth (zero if negative)
60 day (KB)	1,757,033,180	Static space + 60 (daily growth + daily spread)
60 day (GB)	1675.64	Excludes OS, Paging and RDBMS Logs
Log size (MB)	100000.00	Total size of log file
%Log used	72.11	%of log file used during entire run
Total N-O Txn	16062801	Total count of N-O transactions during entire run
Log per N-O txn	4.60	Number of Kbytes per New-Order transaction
8 Hour Log (GB)	148.68	need double for mirroring
os, file sys, swap	17.070	

	Disk size (GB)	Priced Qty	Priced (GB)	Needed(GB)	Extra (GB)
Database, Sys	17.070	180	3072.60	1,692.71	1,396.96
	17.070	1	17.07		
Mrrored Log	17.070	18	307.26	297.36	9.90

Appendix E : Price Quotation

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 425 882 8080
Fax 425 936 7329
http://www.microsoft.com/

Microsoft

March 24, 2003

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
810-00846	**SQL Server 2000 Enterprise Edition** *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	4	$66,164
C11-00821	**Windows 2000 Server** *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	5	$3,690
P72-00264	**Windows Server 2003, Enterprise Server** *Server license only - No CALs* *Discount Schedule: Open Program - No Level* *Unit Price reflects a 40% discount from the retail unit price of $3,999.*	$2,399	1	$2,399
254-00170	**Visual C++ Standard** *No discounts applied*	$109	1	$109
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 April 2, 2003.

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: PCkeya0324039269
Please include this Reference ID in any correspondence regarding this price quote.

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⊖ 3	Allied Telesyn AT-9006T	299709	1-2 Weeks	$2,249.16	$6,747.48
⊖ 2	Intel PRO/100 S Server Adapter	250851	Same Day	$68.50	$137.00
⊖ 1	Intel PRO/100 S Server Adapter, 5-pack	250852	Same Day	$286.03	$286.03
⊖ 8	Mylex eXtremeRAID 2000	372917	1-2 Weeks	$1,419.38	$11,355.04
⊖ 6	NEC AccuSync 50M-BK (black)	382918	Same Day	$127.92	$767.52
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