Hewlett-Packard Company

TPC Benchmark™ C
Full Disclosure Report
for
HP ProLiant DL385 G1/16GB/ Opteron 2.6GHz
using
Microsoft SQL Server 2000 Enterprise Edition SP3
and
Windows Server 2003, Enterprise Edition

First Edition
February 2005

First Edition – February 2005

Hewlett-Packard Company (HP) 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. HP 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, HP 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. HP does not warrant or represent that a user can or will achieve similar performance expressed in transactions per minute (tpmC) or normalized price/performance (USD$/tpmC). No warranty of system performance or price/performance is expressed or implied in this report.

Printed in U.S.A., 2005

Table of Contents

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 5.3.

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.

Although these specifications express implementation in terms of a relational data model with conventional locking scheme, the database may be implemented using any commercially available database management system (DBMS), database server, file system, or other data repository that provides a functionally equivalent implementation. The terms "table", "row", and "column" are used in this document only as examples of logical data structures.

TPC-C uses terminology and metrics that are similar to other benchmarks, originated by the TPC or others. Such similarity in terminology does not in any way imply that TPC-C results are comparable to other benchmarks. The only benchmark results comparable to TPC-C are other TPC-C results conformant with the same revision.

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

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

Abstract

Overview

This report documents the methodology and results of the TPC Benchmark C test conducted on the HP ProLiant DL385 G1. The operating system used for the benchmark was Windows Server 2003, Enterprise Edition. The DBMS used was Microsoft SQL Server 2000 Enterprise Edition SP3.

TPC Benchmark C Metrics

The standard TPC Benchmark C metrics, tpmC (transactions per minute), price per tpmC (three year capital cost per measured tpmC), and the availability date are reported as:

71,413 tpmC
USD $2.15 per tpmC

The availability date is March 31, 2005.

Standard and Executive Summary Statements

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

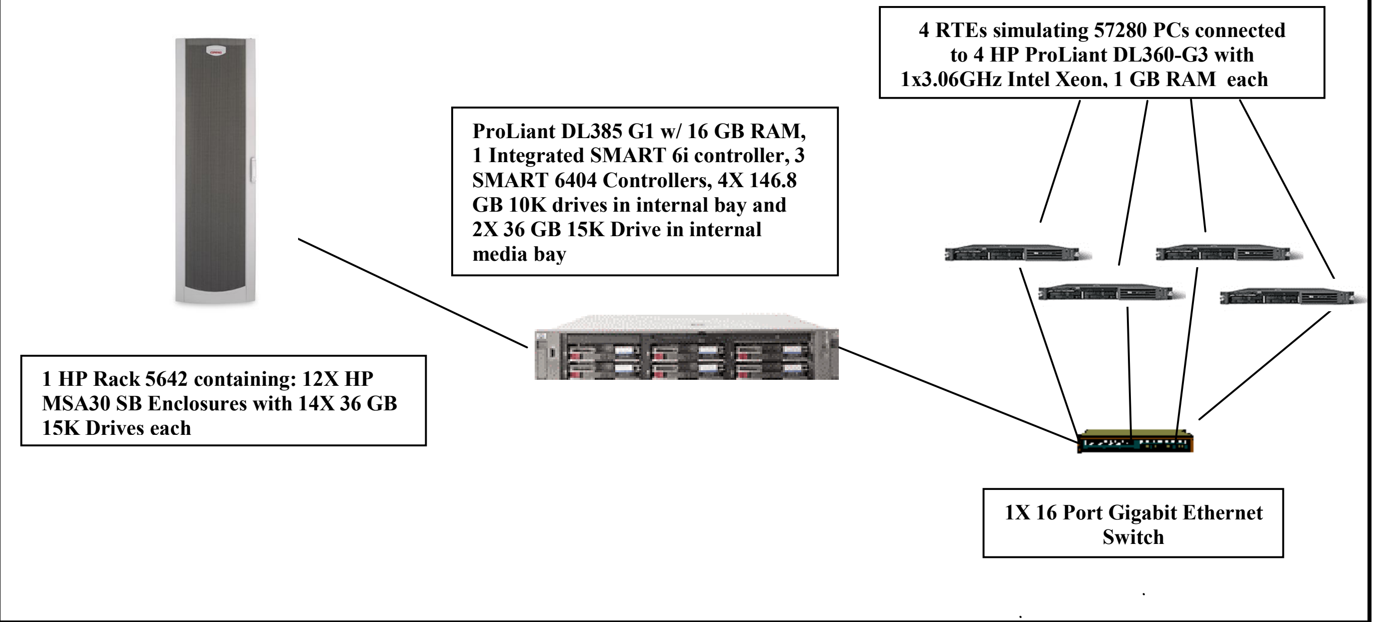
Auditor

The benchmark configuration, environment and methodology were audited by Tom Sawyer of Performance Metrics, Inc. to verify compliance with the relevant TPC specifications.

Hewlett-Packard Company	HP ProLiant DL385 G1 16GB/2.6GHz/2P C/S with 4 HP ProLiant DL360R	TPC-C Rev. 5.3 **Report Date: Feb. 14, 2005**

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date
$153,494 USD	**71,413**	**$2.15 USD**	**March 31, 2005**

Processors	Database Manager	Operating System	Other Software	Number of Users
2 Opteron 252 2.6 GHz (1MB) Server 4 Intel Xeon 3.06 GHz – Clients	Microsoft SQL Server 2000 Enterprise Edition SP3	Windows Server 2003, Enterprise Edition	Microsoft Visual C++ Microsoft COM+	**57280**



4 RTEs simulating 57280 PCs connected to 4 HP ProLiant DL360-G3 with 1x3.06GHz Intel Xeon, 1 GB RAM each

ProLiant DL385 G1 w/ 16 GB RAM, 1 Integrated SMART 6i controller, 3 SMART 6404 Controllers, 4X 146.8 GB 10K drives in internal bay and 2X 36 GB 15K Drive in internal media bay

1 HP Rack 5642 containing: 12X HP MSA30 SB Enclosures with 14X 36 GB 15K Drives each

1X 16 Port Gigabit Ethernet Switch

	Server		Each Client	
System Components	Quantity	Description	Quantity	Description
Processor	2	Opteron 252 2.6GHz w/ 1MB Cache	1	3.06 GHz Intel Xeon w/ 512K cache
Memory	8	2 GB DDR	2	512MB
Disk Controllers	1 3	Integrated SMART 6i Controller HP SMART 6404 Array Controllers	1	Integrated SMART 5i Array Controller
Disk Drives	4 170	146.8 GB SCSI Drive 36.4 GB SCSI Drive	2	36.4 GB SCSI Drive
Total Storage		6279.36 GB		36.4 GB

Hewlett-Packard Company	HP ProliantDL385G1 2.6GHz/1M Client/Server	TPC-C Rev. 5.3 Report Date: 14-Feb-05

Description	Part Number	Third Party Brand	Pricing	Unit Price	Qty	Extended Price	3 yr. Maint. Price
Server Hardware							
DL385G1 Opteron 252 2.6GHz/1M US 6i controller and 2 Gb NICs	379912-001		1	3,299	1	3,299	
AMD Opteron 252 2.6 GHz-1MB Processor Option Kit	376190-B21		1	1,249	1	1,249	
4GB PC3200 DDR SDRAM DIMM Memory Kit (2 x 2 GB)	379300-B21		1	2,419	4	9,676	
HP Storageworks MSA 30 SB Storage	302969-B21		1	2,978	12	35,736	
HP 5642 Unassembled Rack	358254-B21		1	689	1	689	
HP Smart Array 6404/256MB Controller	273914-B21		1	1,899	3	5,697	
HP T500 Uninterruptible Power System	361475-001		1	99	1	99	
36GB 15Krpm U320 UNI HDD	286776-B22		1	299	170	50,830	
HP 146GB 10K U320 Pluggable Hard Drive	286716-B22		1	599	4	2,396	
36GB 15Krpm U320 UNI HDD (10% spares)	286776-B22		1	299	17		5,083
CarePaq Service - 300 Series Servers 3Yr,7x24,4hr	162657-002		1	949	1		949
FM-4E724-36 3YR 24X7/4HR EMPTY DISK ENCL	171242-002		1	157	12		1,884
					Subtotal	**109,671**	**7,916**
Server Software							
Microsoft SQL Server 2000 Enterprise Edition(per processor)	810-00845	Microsoft	2	17,279	2	34,558	
Visual C++ .Net Standard	254-00170	Microsoft	2	109	1	109	Incl below
Microsoft Windows Server 2003, Enterprise Edition	P72-00264	Microsoft	2	2,399	1	2,399	Incl below
Microsoft Problem Resolution Services (1 incident)		Microsoft	2	245	1		245
					Subtotal	**37,066**	**245**
Client Hardware							
HP Proliant DL360G3 1P 3.06GHz/533 (512KB L2, 1MB L3) - 1024 MB memory, embedded SMART 5i array controller - embedded dual channel Gigabit NIC	322471-001		1	2,599	4	10,396	
36GB 15Krpm U320 UNI HDD	286776-B22		1	299	8	2,392	
HP s7540 17in. CRT Monitor	PF997AA#ABA		1	129	4	516	
HP PS/2 Scroll Mouse carbonite	DG169AV		1	5	4	20	
HP Enhanced Keyboard	DG170AV#ABA		1	10	4	40	
HP CP 3Y 4H 24x7 HW Support DL360 4-Hour 24 x 7 Coverage 3 Yrs	U4497E		1	550	4		2,200
					Subtotal	**13,364**	**2,200**
Client Software							
Microsoft Windows 2000 Server	C11-00821	Microsoft	2	738	4	2,952	Incl. Above
					Subtotal	**2,952**	**0**
User Connectivity							
Netgear 16-port 10/100/1000BTX Gigabit Switch	44508	Netgear	3	361	1	361	
Netgear 16-port 10/100/1000BTX Gigabit Switch (10% spares)	44508	Netgear	3	361	2		723
3 year extended warranty from PC Universe		PCUniverse	3	100	3		300
					Subtotal	**361**	**1,023**
Large Purchase and Net 30 discount (See Note 1)	16.0%		1			**($19,686)**	**($1,619)**
					Total	**$143,729**	**$9,765**

Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing sections of the TPC benchmark pricing 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.

Three-Year Cost of Ownership:	**$153,494 USD**
tpmC Rating:	**71,413**
$ / tpmC:	**$2.15 USD**

Pricing: 1=HP 2= Microsoft 3=PCUniverse.com

Note 1 = Discount based on HP Direct guidence with large purchase and Net 30 discount.

Note:The benchmark results and test methodology were audited by Tom Sawyer of Performance Metrics, Inc.

Numerical Quantities Summary

MQTH, Computed Maximum Qualified Throughput 71,413 tpmC

Response Times (in seconds)	Average	90%	Maximum
New-Order	0.47	0.75	5.29
Payment	0.40	0.68	4.45
Order-Status	0.42	0.69	4.58
Delivery (interactive portion)	0.10	0.11	0.46
Delivery (deferred portion)	0.17	0.25	1.03
Stock-Level	1.28	1.68	4.85
Menu	0.10	0.11	0.47

Transaction Mix, in percent of total transaction	
New-Order	44.90%
Payment	43.05%
Order-Status	4.01%
Delivery	4.01%
Stock-Level	4.04%

Emulation Delay (in seconds)	Resp.Time	Menu
New-Order	0.10	0.10
Payment	0.10	0.10
Order-Status	0.10	0.10
Delivery (interactive)	0.10	0.10
Stock-Level	0.10	0.10

Keying/Think Times (in seconds)	Min.	Average	Max.
New-Order	18.00/0.00	18.02/12.05	18.12/120.60
Payment	3.00/0.00	3.02/12.06	3.13/120.60
Order-Status	2.00/0.00	2.02/10.07	2.12/100.60
Delivery (interactive)	2.00/0.00	2.02/5.07	2.03/50.61
Stock-Level	2.00/0.00	2.02/5.06	2.11/50.60

Test Duration	
Ramp-up time	30 minutes
Measurement interval	120 minutes
Transactions (all types) completed during measurement interval	19,851,950
Ramp down time	20 minutes

Checkpointing	
Number of checkpoints	4
Checkpoint interval	30 minutes

General Items

Test Sponsor

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

This benchmark was sponsored by Hewlett-Packard Company. The benchmark was developed and engineered by Hewlett-Packard Company. Testing took place at HP benchmarking laboratories in Houston, Texas.

Application Code and Definition Statements

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

Appendix A contains all source code implemented in this benchmark.

Parameter Settings

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

- *Database options*
- *Recover/commit options*
- *Consistency locking options*
- *Operating system and application configuration parameters*

This requirement can be satisfied by providing a full list of all parameters.

Appendix C contains the tunable parameters to for the database, the operating system, and the transaction monitor.

Configuration Items

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

The configuration diagram for both the tested and priced systems are included on the following page.

Figure 1 Benchmarked Configuration

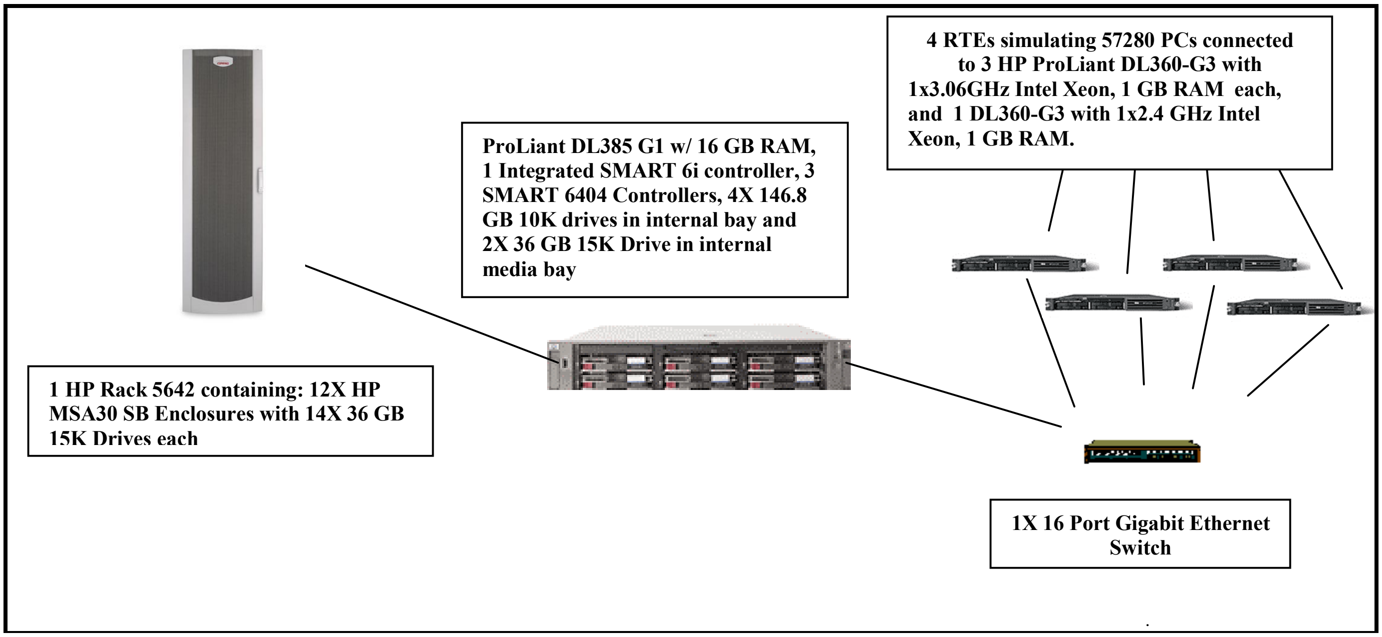
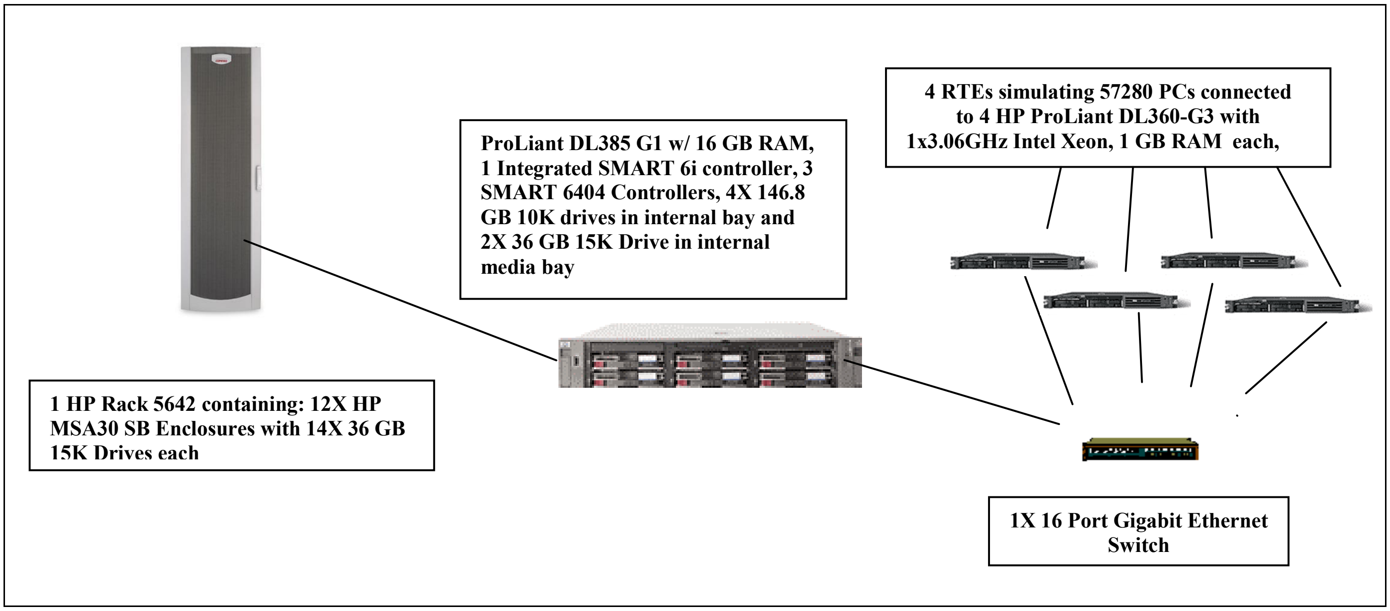

4 RTEs simulating 57280 PCs connected to 3 HP ProLiant DL360-G3 with 1x3.06GHz Intel Xeon, 1 GB RAM each, and 1 DL360-G3 with 1x2.4 GHz Intel Xeon, 1 GB RAM.
ProLiant DL385 G1 w/ 16 GB RAM, 1 Integrated SMART 6i controller, 3 SMART 6404 Controllers, 4X 146.8 GB 10K drives in internal bay and 2X 36 GB 15K Drive in internal media bay
1 HP Rack 5642 containing: 12X HP MSA30 SB Enclosures with 14X 36 GB 15K Drives each
1X 16 Port Gigabit Ethernet Switch

Figure 2 Priced Configuration


4 RTEs simulating 57280 PCs connected to 4 HP ProLiant DL360-G3 with 1x3.06GHz Intel Xeon, 1 GB RAM each,
ProLiant DL385 G1 w/ 16 GB RAM, 1 Integrated SMART 6i controller, 3 SMART 6404 Controllers, 4X 146.8 GB 10K drives in internal bay and 2X 36 GB 15K Drive in internal media bay
1 HP Rack 5642 containing: 12X HP MSA30 SB Enclosures with 14X 36 GB 15K Drives each
1X 16 Port Gigabit Ethernet Switch

Clause 1 Related Items

Table Definitions

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

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

Physical Organization of Database

The physical organization of tables and indices within the database must be disclosed.
The tested configuration consisted of: 168 drives at 36.4GB connected to 3 SMART 6404 controllers for database data, 2 36.4GB drives for the operating system connected to the integrated SMART 6i controller, along with 4 drives at 146.8GB in the internal drive bays for the database log.

Benchmarked Configuration:

Integrated SMART 6i Controller, Array A

LOGICAL DRIVE C:	Total Capacity = 33.19 GB	RAID 1
Microsoft Windows Server 2003, Enterprise Edition		
LOGICAL DRIVE E:	Total Capacity = 273.45 GB	RAID 0+1
MSSQL_tpcc_log		

SMART-6404 Controller, Slot 1, Array A

LOGICAL DRIVE F:	Total Capacity = 67.38 GB	RAID 0
MSSQL_cs1		
LOGICAL DRIVE X:	Total Capacity = 441.10 GB	RAID 0+1
Tpccback1		

SMART-6404 Controller Expansion Module, Slot 1, Array A

LOGICAL DRIVE K:	Total Capacity = 163.08 GB	RAID 0
MSSQL_misc1		

SMART-6404 Controller, Slot 2, Array A

LOGICAL DRIVE G:	Total Capacity = 67.38 GB	RAID 0
MSSQL_cs2		
LOGICAL DRIVE Y:	Total Capacity = 441.10 GB	RAID 0+1
Tpccback2		

SMART-6404 Controller Expansion Module, Slot 2, Array A

LOGICAL DRIVE H:	Total Capacity = 67.38 GB	RAID 0
MSSQL_cs3		

SMART-6404 Controller, Slot 3, Array A

LOGICAL DRIVE I:	Total Capacity = 67.38 GB	RAID 0
MSSQL_cs4		
LOGICAL DRIVE Z:	Total Capacity = 441.10 GB	RAID 0+1
Tpccback3		

SMART-6404 Controller Expansion Module, Slot 3, Array A

LOGICAL DRIVE J: Total Capacity = 67.38 GB RAID 0

MSSQL_cs5

Priced Configuration vs. Measured Configuration:

The measured configuration had 3 HP ProLiant DL360 G3 systems with a 3.06GHz processor, and one HP ProLiant DL360 G3 system with a 2.4GHz processor. The priced configuration used 4 HP ProLiant DL360 G3 systems with a 3.06GHz processor.

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 restrictions in the SUT database implementation that precludes inserts beyond the limits defined in Clause 1.4.11 must be disclosed. This includes the maximum number of rows that can be inserted and the minimum key value for these new rows.

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

Partitioning

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

No partitioning was used in this benchmark.

Replication, Duplication or Additions

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

No replications, duplications or additional attributes were used in this benchmark.

Clause 2 Related Items

Random Number Generation

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

In the Benchcraft RTE from Microsoft, each driver engine uses an independent random number sequence. All of the users within a given driver draw from the same sequence.

The Benchcraft RTE computes random integers as described in “Random Numbers Generators: Good Ones Are Hard to Find." Communications of the ACM - October 1988 Volume 31 Number 10.

The seeds for each user were captured and verified by the auditor to be unique. In addition, the contents of the database were systematically searched, and randomly sampled by the auditor for patterns that would indicate the random number generator had affected any kind of a discernible pattern; none were found.

Input/Output Screen Layout

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

All screen layouts followed the specifications exactly.

Priced Terminal Feature Verification

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

The terminal attributes were verified by the auditor. The auditor manually exercised each specification on a representative HP ProLiant web server.

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 forms applications is listed in Appendix A.

Transaction Statistics

Table 2.1 lists the numerical quantities that Clauses 8.1.3.5 to 8.1.3.11 require.

Table 2.1 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	85.00%
	Remote warehouse payments	15.00%
	Accessed by last name	60.00%
Order Status	Accessed by last name	60.03%
Transaction Mix	New Order	44.90%
	Payment	43.05%
	Order status	4.01%
	Delivery	4.01%
	Stock level	4.04%

Queuing Mechanism

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

Microsoft COM+ on each client machine served as the queuing mechanism to the database. Each delivery request was submitted to Microsoft COM+ asynchronously with control being returned to the client process immediately and the deferred delivery part completing asynchronously.

The source code is listed in Appendix A.

Clause 3 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.

All ACID property tests were successful. The executions are described below.

Atomicity

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

Completed Transactions

A row was selected in a script from the warehouse, district and customer tables, and the balances noted. A payment transaction was started with the same warehouse, district and customer identifiers and a known amount. The payment transaction was committed and the rows were verified to contain correctly updated balances.

Aborted Transactions

A row was selected in a script from the warehouse, district and customer tables, and the balances noted. A payment transaction was started with the same warehouse, district and customer identifiers and a known amount. The payment transaction was rolled back and the rows were verified to contain the original balances.

Consistency

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 under full load lasting over two hours and included a checkpoint.

The script was executed again. The result of the same queries verified that the database remained consistent after the run.

Isolation

Sufficient conditions must be enabled at either the system or application level to ensure the required isolation defined above (clause 3.4.1) 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 by the auditor to demonstrate the required isolation had been met.

In addition, the phantom tests and the stock level tests were executed and verified.

For Isolation test seven, case A was followed.

Durability

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

Durable Media Failure

Loss of Data and Log

This test was executed on a fully scaled database of 5760 warehouses under a full load of 5760 users, which accessed only the first 576 warehouses. To demonstrate recovery from a permanent failure of durable medium containing DBMS logs and TPC-C tables, the following steps were executed:

- The total number of New Orders was determined by the sum of D_NEXT_O_ID of all rows in the DISTRICT table giving the beginning count.
- The RTEs were started with 5760 users.
- The test was allowed to run for a minimum of 10 minutes.
- One log disk was removed from the server.
- Since the disk was mirrored, processing was not interrupted. This was verified by checking the user status on the RTE.
- One of the data disks was removed from a MSA 30.
- When Microsoft SQL Server recorded errors about not being able to access the database, the RTE was shut down and SQL stopped.
- Both disks were replaced with new disks, and the log drive was allowed to complete RAID1 recovery.
- Server was rebooted
- Microsoft SQL Server was restarted. A dump of the transaction log was taken.
- The database was restored from backup and the transaction log dump was applied.
- Consistency condition #3 was executed and verified.
- Step 1 was repeated and the difference between the first and second counts was noted.
- An RTE report was generated for the entire run time giving the number of NEW-ORDERS successfully returned to the RTE.
- The counts in step 13 and 14 were compared and the results verified that all committed transactions had been successfully recovered.
- Samples were taken from the RTE files and used to query the database to demonstrate successful transactions had corresponding rows in the ORDER table.

Instantaneous Interruption and Loss of Memory

Because loss of power erases the contents of memory, the instantaneous interruption and the loss of memory tests were combined into a single test. This test was executed on a fully scaled database of 5728 warehouses under a full load of 57,280 users. The following steps were executed:

- The total number of New Orders was determined by the sum of D_NEXT_O_ID of all rows in the DISTRICT table giving the beginning count.
- The RTE was started with 57,280 users.
- The test was allowed to run for a minimum of 10 minutes.
- System crash and loss of memory were induced by pulling the power cord out of the system.
- The RTE was shutdown.
- Power was restored and the system restarted.
- Microsoft SQL Server was restarted and performed an automatic recovery.
- Consistency condition #3 was executed and verified.
- Step 1 was repeated and the difference between the first and second counts was noted.

- An RTE report was generated for the entire run time giving the number of NEW-ORDERS successfully returned to the RTE.
- The counts in steps 9 and 10 were compared and the results verified that all committed transactions had been successfully recovered.
- Samples were taken from the RTE files and used to query the database to demonstrate successful transactions had corresponding rows in the ORDER table.

Clause 4 Related Items

Initial Cardinality of Tables

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

Table 4.1 Number of Rows for Server

Table	Cardinality as built
Warehouse	5760
District	57,600
Customer	172,800,000
History	172,800,000
Orders	172,800,000
New Order	51,840,000
Order Line	1,728,003,323
Stock	576,000,000
Item	100,000

Database Layout

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

The benchmarked configuration used 3 SMART 6404 Array controllers with 4 SCSI channels each connected to 12 MSA30 single-bus disk enclosures and 1 integrated SMART6i controller connected to two 36.4 GB disks and four 146.8 GB disks in the internal disk drive bays. Each SMART 6404 Array controller is capable of accessing up to 14 disk drives per channel and supports RAID 0, RAID 0+1, and RAID 5 per each logical volume configured with a limit of 28 drives per volume. The data tables were stored on 6 RAID arrays of (28) 36.4 GB drives each. Three arrays were configured with 1 logical drive (RAID 0) for database data and a RAID 0+1 volume used for backup of the database. The three other arrays were configured with 1 logical drive RAID 0 for database data only. The database log volume was configured using four 146.8 GB drives as RAID 0+1 on the internal SMART6i controller. The operating system was also configured on the internal SMART6i controller on a RAID1 pair of 36.4GB 15K drives. The Array Accelerators on the data controllers were configured as 100% write cache and were enabled for all logical drives. The internal SMART6i controller had the cache disabled. All RAID volumes used hardware RAID.

Section 1.2 of this report details the distribution of database tables across all disks. The code that creates the filegroups and tables is included in Appendix B.

Type of Database

A statement must be provided that describes:

- *The data model implemented by DBMS used (e.g. relational, network, hierarchical).*
- *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 transaction. 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 Enterprise Edition is a relational DBMS.

The interface used was Microsoft SQL Server stored procedures accessed with Remote Procedure Calls embedded in C code.

Database Mapping

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

The database was not replicated.

60 Day Space

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

To calculate the space required to sustain the database log for 8 hours of growth at steady state, the following steps were followed:

- The free space on the log file was queried using *dbcc sqlperf(logspace)*.
- Transactions were run against the database with a full load of users.
- The free space was again queried using *dbcc sqlperf(logspace)*.
- The space used was calculated as the difference between the first and second query.
- The number of NEW-ORDERS was verified from the difference in the sum(d_next_o_id) taken from before and after the run.
- The space used was divided by the number of NEW-ORDERS giving a space used per NEW-ORDER transaction.
- The space used per transaction was multiplied by the measured tpmC rate times 480 minutes.

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

The details of both the 8-hour transaction log space requirement and the 60-day space requirement are shown in Appendix D.

Clause 5 Related Items

Throughput

Measured tpmC must be reported

Measured tpmC	71,413 tpmC
Price per tpmC	USD $2.15 per 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 5.2: Response Times

Type	Average	90th %	Maximum
New-Order	0.47	0.75	5.29
Payment	0.40	0.68	4.45
Order-Status	0.42	0.69	4.58
Interactive Delivery	0.10	0.11	0.46
Deferred Delivery	0.17	0.25	1.03
Stock-Level	1.28	1.68	4.85
Menu	0.10	0.11	0.47

Keying and Think Times

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

Table 5.3: Keying Times

Type	Minimum	Average	Maximum
New-Order	18.00	18.02	18.12
Payment	3.00	3.02	3.13
Order-Status	2.00	2.02	2.12
Interactive Delivery	2.00	2.02	2.03
Stock-Level	2.00	2.02	2.11

Table 5.4: Think Times

Type	Minimum	Average	Maximum
New-Order	0.00	12.05	120.60
Payment	0.00	12.06	120.60
Order-Status	0.00	10.07	100.60
Interactive Delivery	0.00	5.07	50.61
Stock-Level	0.00	5.06	50.60

Response Time Frequency Distribution Curves and Other Graphs

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

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

Think Time frequency distribution curves (see Clause 5.6.3) must be reported for each transaction type.

Keying Time frequency distribution curves (see Clause 5.6.4) must be reported for each transaction type.

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

Figure 2 New Order Response Time Distribution

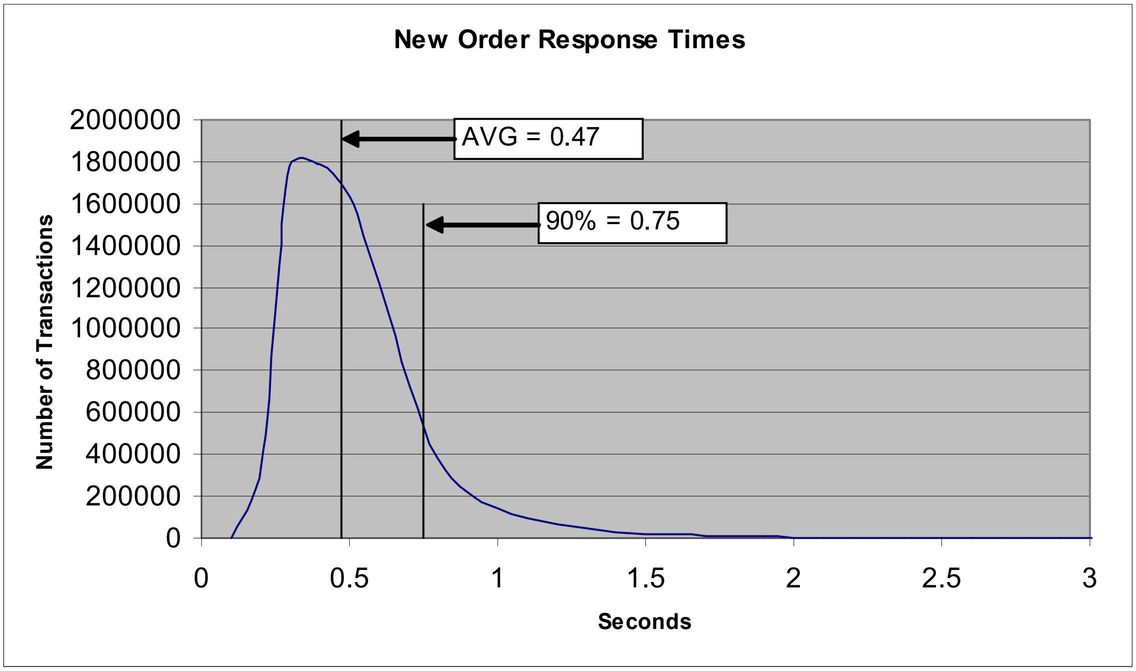


Figure 3 Payment Response Time Distribution

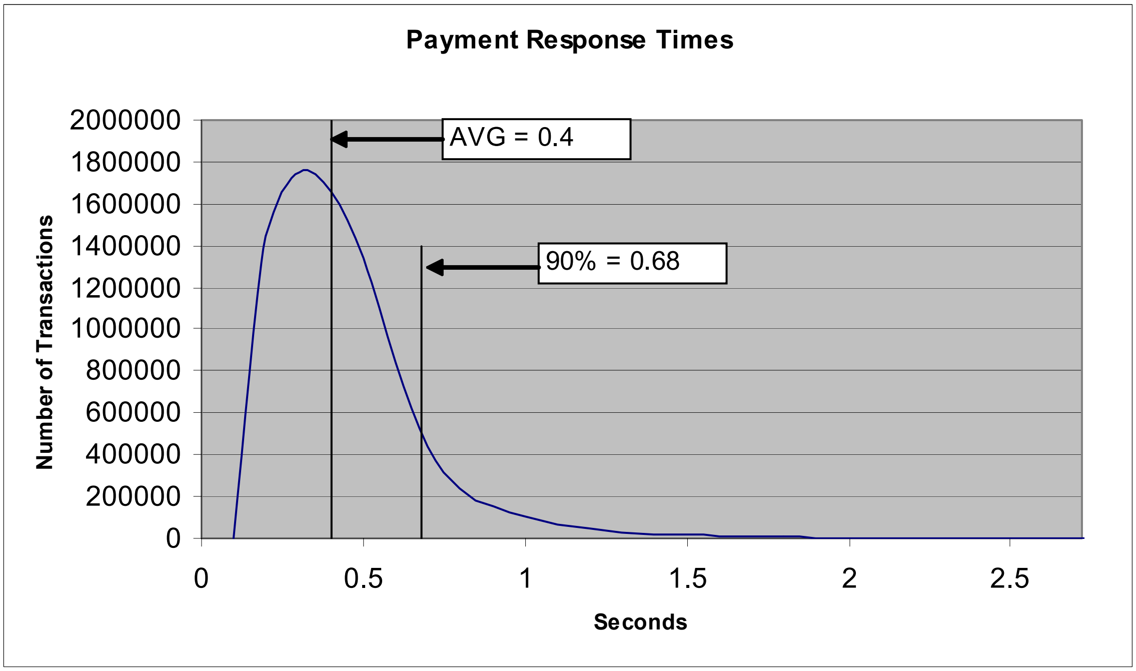


Figure 4 Order Status Response Time Distribution

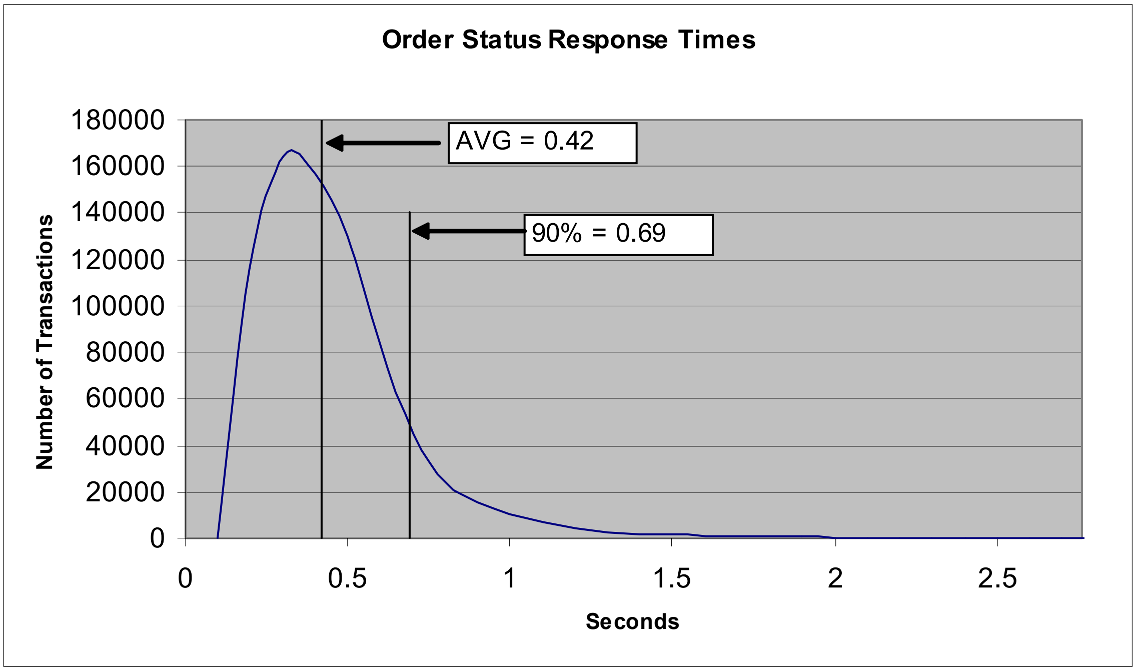


Figure 5 Delivery Response Time Distribution

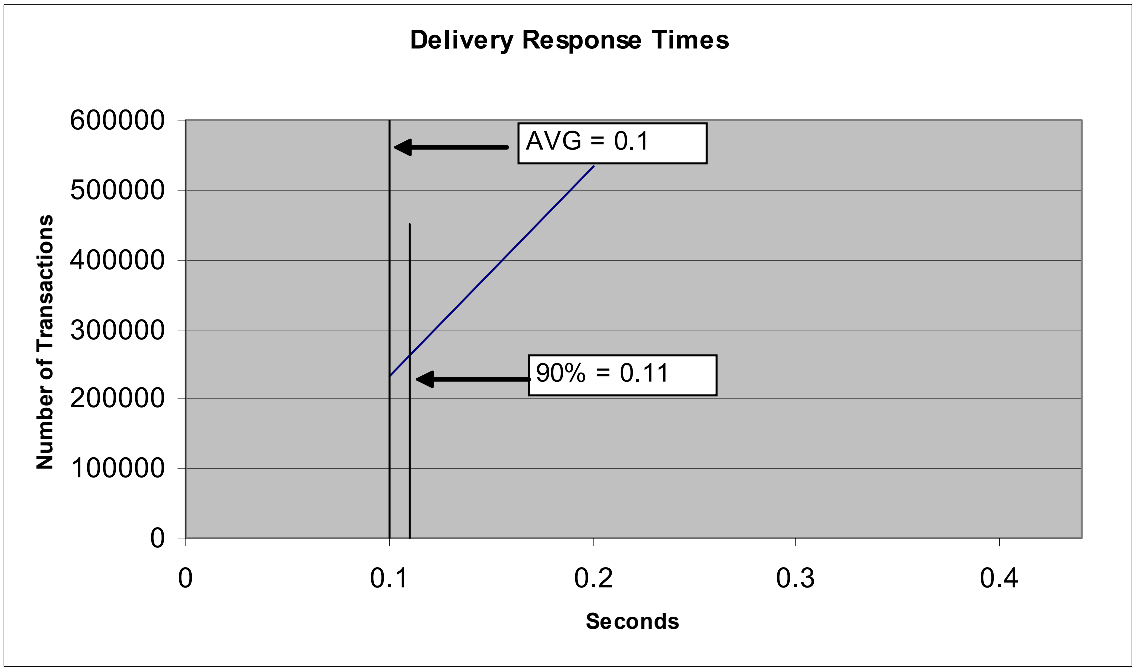


Figure 6 Stock Level Response Time Distribution

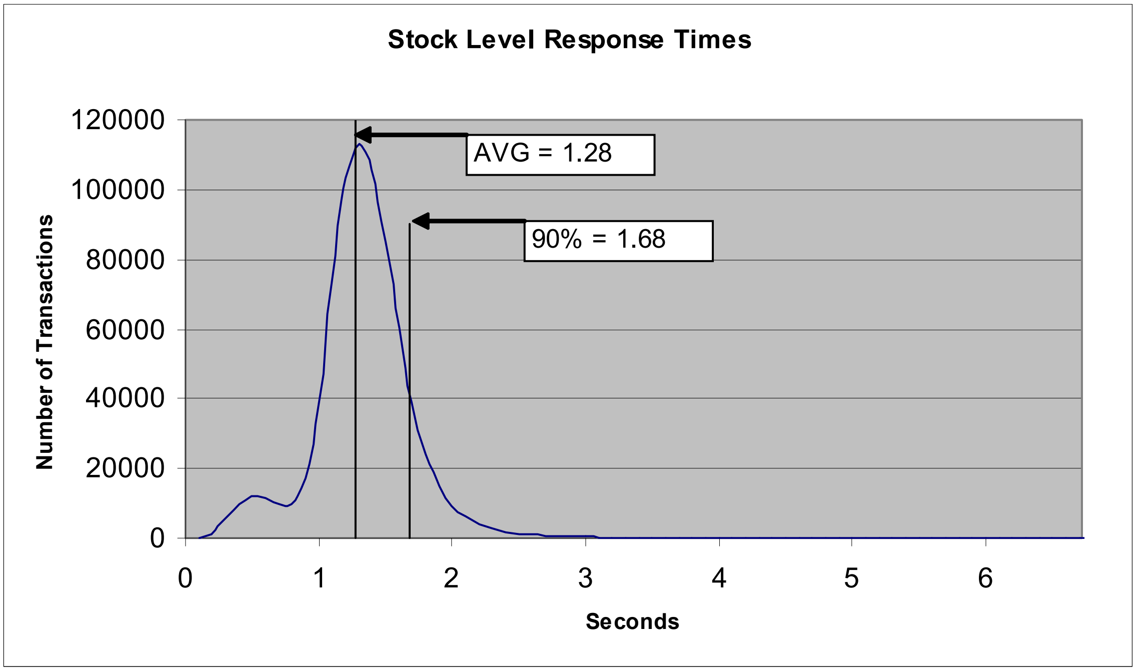


Figure 7 Response Time vs. Throughput

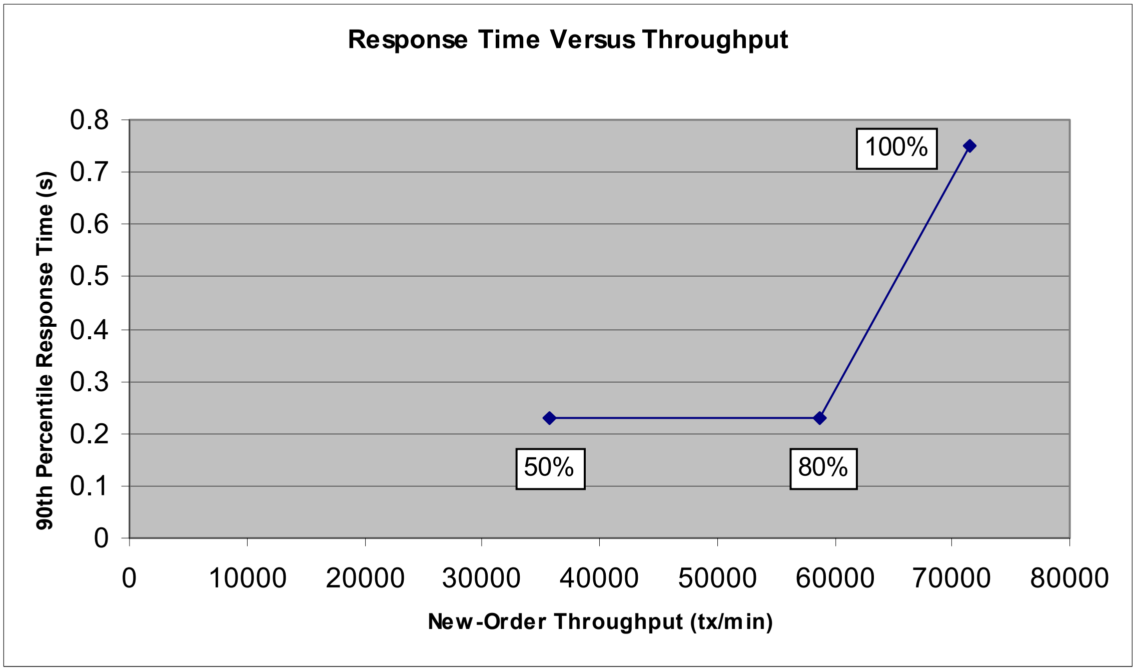


Figure 8 New Order Think Time Distribution

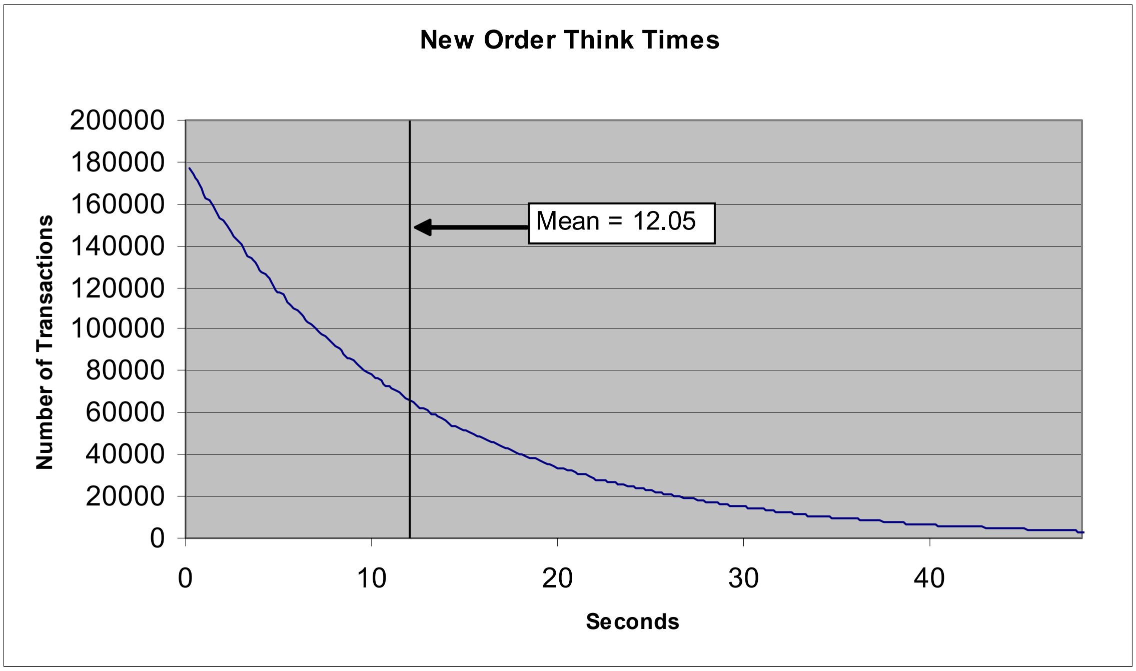
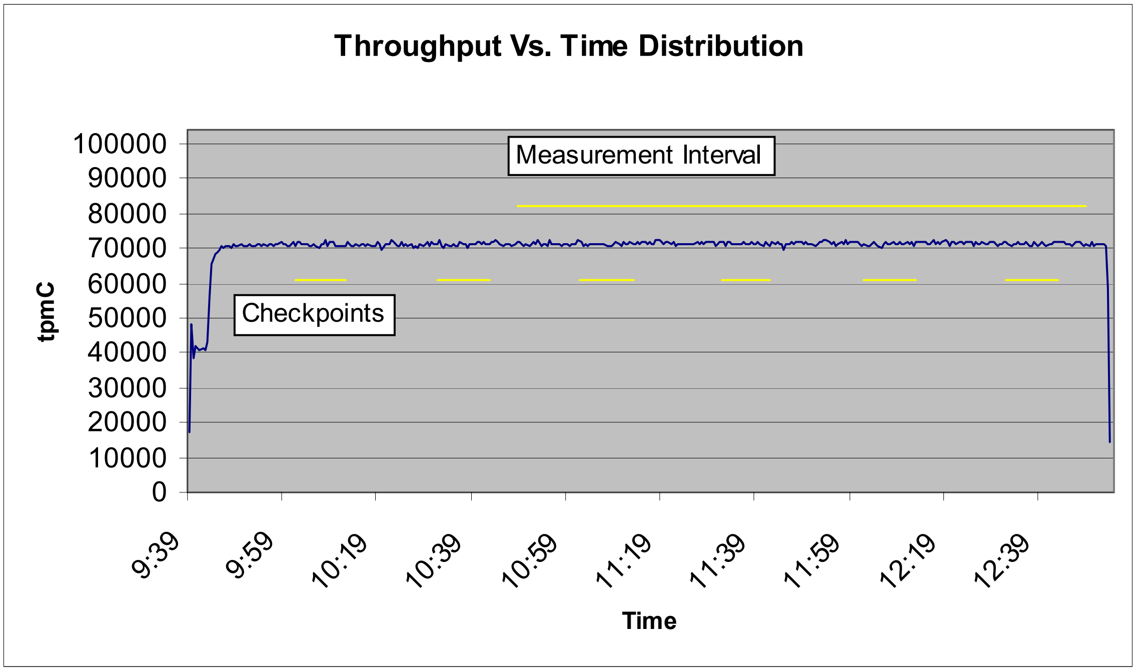


Figure 9 Throughput vs. Time Distribution



Steady State Determination

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

Steady state was determined using real time monitor utilities from the RTE. Steady state was further confirmed by the throughput data collected during the run and graphed in Figure 10.

Work Performed During Steady State

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

The RTE generated the required input data to choose a transaction from the menu. This data was timestamped. The input screen for the requested transaction was returned and timestamped. The difference between these two timestamps was the menu response time. The RTE writes to the log file once per transaction on selective fields such as order id. There is one log file per driver engine.

The RTE generated the required input data for the chosen transaction. It waited to complete the minimum required key time before transmitting the input screen. The transmission was timestamped. The return of the screen with the required response data was timestamped. The difference between these two timestamps was the response time for that transaction.

The RTE then waited the required think time interval before repeating the process starting at selecting a transaction from the menu.

The RTE transmissions were sent to application processes running on the client machines through Ethernet LANs. These client application processes handled all screen I/O as well as all requests to the database on the server. The applications communicated with the database server over gigabit Ethernet LANs using ODBC and RPC calls.

To perform checkpoints at specific intervals, the SQL Server *recovery interval* was set to 80 and a script was written to schedule multiple checkpoints at specific intervals. The script included a wait time between each checkpoint equal to 30 minutes so that the checkpoint interval was an integral multiple of the measurement interval, which was 120 minutes. The checkpoint script was started manually after the RTE had all users logged in and the database had achieved steady state.

At each checkpoint, Microsoft SQL Server wrote to disk all memory pages that had been updated but not yet physically written to disk. The positioning of the measurement interval is depicted on the graph in Figure 10.

Measurement Period Duration

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

The reported measured interval was exactly 120 minutes long.

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 was not adjusted during the run.

Transaction Statistics

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

Table 5.5: 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	85.00%
	Remote warehouse payments	15.00%
	Accessed by last name	60.00%
Delivery	Skipped transactions (interactive)	0
	Skipped transactions (deferred)	0
Order Status	Accessed by last name	60.03%
Transaction Mix	New Order	44.90%
	Payment	43.05%
	Order status	4.01%
	Delivery	4.01%
	Stock level	4.04%

Checkpoint Count and Location

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

The initial checkpoint was started 30 minutes after the start of the ramp-up. Subsequent checkpoints occurred every 30 minutes. Each checkpoint in the measurement interval lasted approximately 10 minutes. The measurement interval contains four checkpoints.

Checkpoint Duration

The start time and duration in seconds of at least the four longest checkpoints during the Measurement Interval must be disclosed.

Checkpoint Start Time	Duration
11:02:24.25a.m.	11 minutes, 18.70 seconds
11:32:21.25a.m.	10 minutes, 37.70 seconds
12:02:18.28a.m.	10 minutes, 40.29 seconds
12:32:15.29a.m.	11 minutes, 33.91 seconds

Clause 6 Related Items

RTE Descriptions

If the RTE is commercially available, then its inputs must be specified. Otherwise, a description must be supplied of what inputs (e.g., scripts) to the RTE had been used.

The RTE used was Microsoft Benchcraft RTE. Benchcraft is a proprietary tool provided by Microsoft and is not commercially available. The RTE's input is listed in Appendix A.

Emulated Components

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

The driver system consisted of 4 HP ProLiant servers. These driver machines emulated the users' web browsers.

Functional Diagrams

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

The driver system performed the data generation and input functions of the priced display device. It also captured the input and output data and timestamps for post-processing of the reported metrics. No other functionality was included on the driver system.

Section 1.4 of this report contains detailed diagrams of both the benchmark configuration and the priced configuration.

Networks

The network configuration of both the tested services and proposed (target) services that 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.

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

In the tested configuration, 4 driver (RTE) machines were connected through a gigabit Ethernet switch to the client machines at 1Gbs, thus providing the path from the RTEs to the clients. The server (SUT) was connected to the clients through a gigabit Ethernet switch on a separate LAN.

The priced configuration was connected in the same manner as the tested configuration.

Operator Intervention

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

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

Clause 7 Related Items

System Pricing

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

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

The details of the hardware and software are reported in the front of this report as part of the executive summary. All third party quotations are included at the end of this report as Appendix E.

Availability, Throughput, and Price Performance

The committed delivery date for general availability (availability date) of products used in the price calculation must be reported. When the priced system included products with different availability dates, the reported availability date for the priced system must be the date at which all components are committed to be available.

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

• **Maximum Qualified Throughput**	**71,413 tpmC**
• **Price per tpmC**	**USD $2.15 per tpmC**
• **Availability**	**March 31, 2005**

Country Specific Pricing

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

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

Usage Pricing

For any usage pricing, the sponsor must disclose:

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

The component pricing based on usage is shown below:

- 4 Microsoft Windows 2000 Server
- 1 Microsoft Windows Server 2003, Enterprise Edition
- 2 Microsoft SQL Server 2000 Enterprise Edition SP3 (per processor licensing)
- 1 Microsoft Visual C++
- HP Servers include 3 years of support.

Clause 9 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.

This implementation of the TPC Benchmark C was audited by Tom Sawyer of Performance Metrics, Inc.

Performance Metrics, Inc.
PO Box 984
Klamath, CA 95548
(phone) (916) 985-1131
(fax) 916) 985-1185
e-mail: lorna@perfmetrics.com

Availability of the Full Disclosure Report

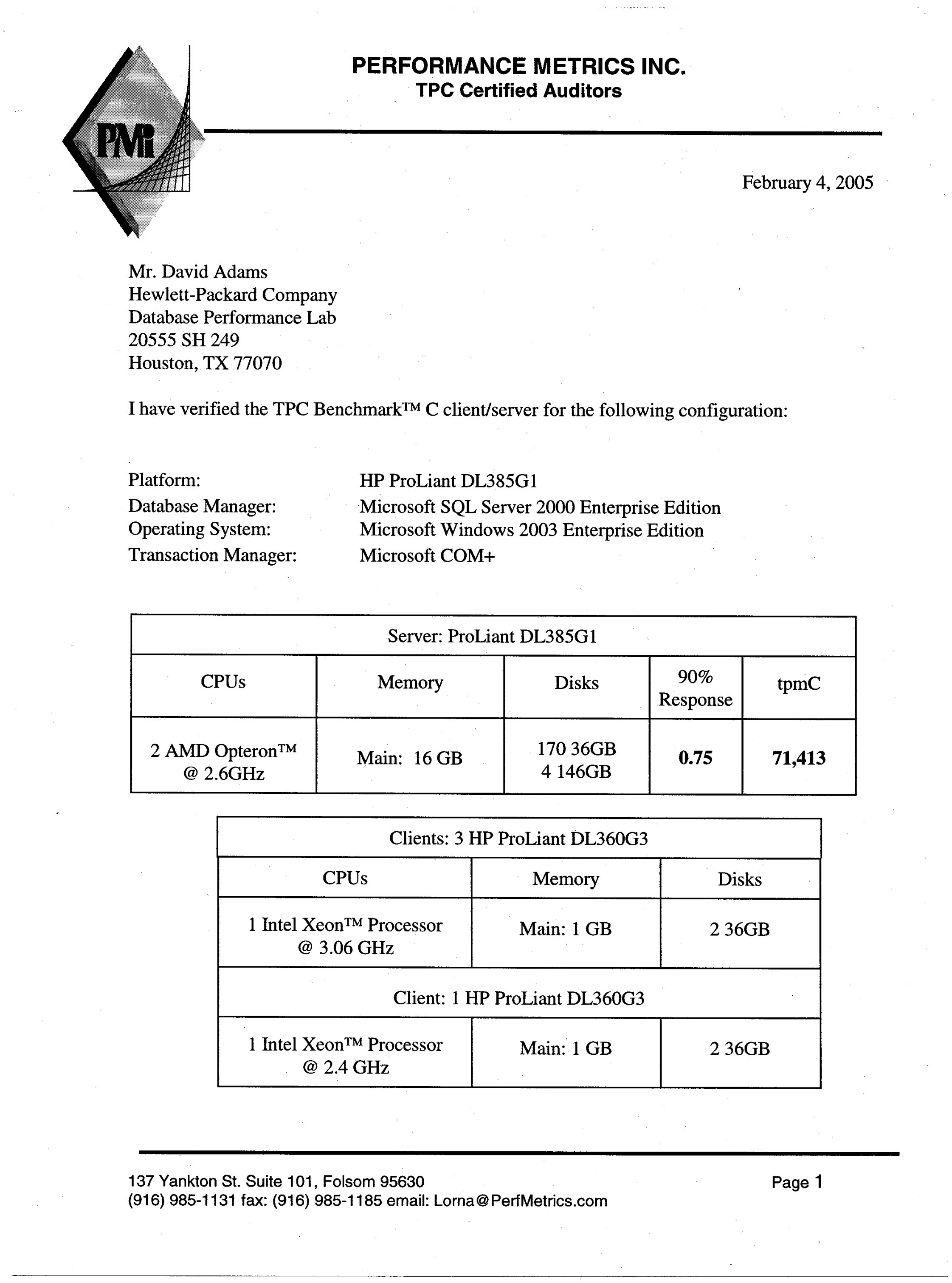
The Full Disclosure Report must be readily available to the public at a reasonable charge, similar to the charges for similar documents by the test sponsor. The report must be made available when results are made public. In order to use the phrase "TPC Benchmark™ C", the Full Disclosure Report must have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

Requests for this TPC Benchmark C Full Disclosure Report should be sent to:

Transaction Processing Performance Council
Presidio of San Francisco
P.O. Box 29920
San Francisco, CA 94129-0920

Voice: 415-561-6272
Fax: 415-561-6120
Email: info@tpc.org
or

Hewlett-Packard Company
Database Performance Engineering
P.O. Box 692000
Houston, TX 77269-2000



PERFORMANCE METRICS INC.
TPC Certified Auditors

February 4, 2005

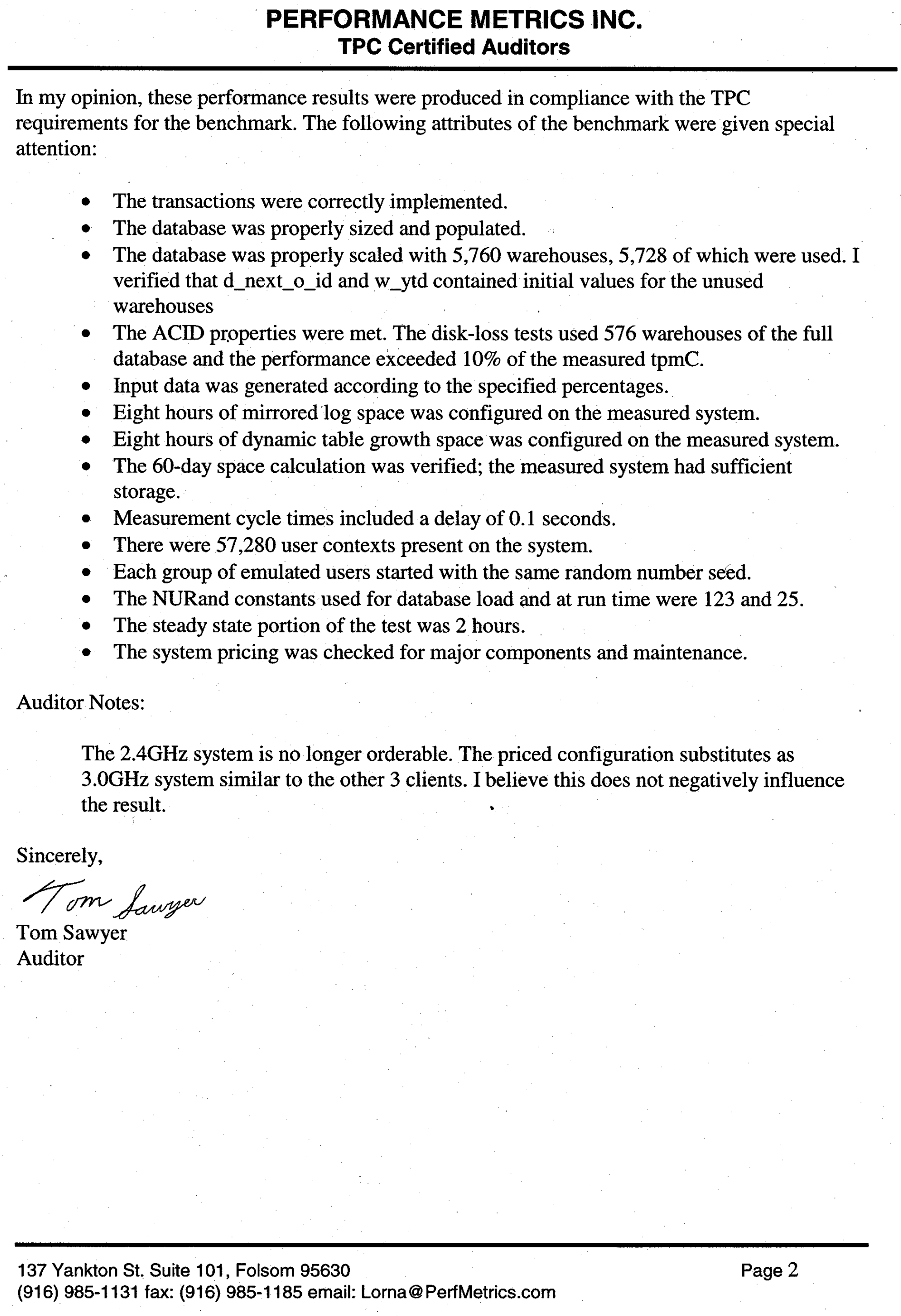
Mr. David Adams
Hewlett-Packard Company
Database Performance Lab
20555 SH 249
Houston, TX 77070

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

Platform:	HP ProLiant DL385G1
Database Manager:	Microsoft SQL Server 2000 Enterprise Edition
Operating System:	Microsoft Windows 2003 Enterprise Edition
Transaction Manager:	Microsoft COM+

Server: ProLiant DL385G1				
CPUs	Memory	Disks	90% Response	tpmC
2 AMD Opteron™ @ 2.6GHz	Main: 16 GB	170 36GB 4 146GB	**0.75**	**71,413**

Clients: 3 HP ProLiant DL360G3		
CPUs	Memory	Disks
1 Intel Xeon™ Processor @ 3.06 GHz	Main: 1 GB	2 36GB
Client: 1 HP ProLiant DL360G3		
1 Intel Xeon™ Processor @ 2.4 GHz	Main: 1 GB	2 36GB



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

- The transactions were correctly implemented.
- The database was properly sized and populated.
- The database was properly scaled with 5,760 warehouses, 5,728 of which were used. I verified that d_next_o_id and w_ytd contained initial values for the unused warehouses
- The ACID properties were met. The disk-loss tests used 576 warehouses of the full database and the performance exceeded 10% of the measured tpmC.
- Input data was generated according to the specified percentages.
- Eight hours of mirrored log space was configured on the measured system.
- Eight hours of dynamic table growth space was configured on the measured system.
- The 60-day space calculation was verified; the measured system had sufficient storage.
- Measurement cycle times included a delay of 0.1 seconds.
- There were 57,280 user contexts present on the system.
- Each group of emulated users started with the same random number seed.
- The NURand constants used for database load and at run time were 123 and 25.
- The steady state portion of the test was 2 hours.
- The system pricing was checked for major components and maintenance.

Auditor Notes:

> The 2.4GHz system is no longer orderable. The priced configuration substitutes as 3.0GHz system similar to the other 3 clients. I believe this does not negatively influence the result.

Sincerely,

Tom Sawyer

Tom Sawyer
Auditor

Appendix A: Source Code

The client source code is listed below.

client_utils.c

```
/* client_utils.c
*/

#include <stdio.h>
#include <time.h>
#include <windows.h>
#include <winperf.h>
#include <winsock.h>
#include "client_utils.h"

#define Li2Double(x) ((double)((x).HighPart) *
4.294967296E9 + (double)((x).LowPart))

static LARGE_INTEGER pFreq;
static double sFreq;
static int print_thread_id = 1;
static int user_id = 0;
static char *user_code = "C";

/*
 *  get_thread_id
 *      A function that returns the thread ID of the
current thread
 */
static int get_thread_id()
{
    return(GetCurrentThreadId());
}


/*
 *  get_prefix
 *        Format the output prefix for printing:
 *        It contains the user_id, 'C' or 'T'
depending on whether it
 *        is a terminal or a client and optional a
thread identifier
 *        The prefix is written in the buffer passed
in by the caller.
 */
static void get_prefix(char *buffer)
{
    if (print_thread_id) {
                    int thread_id = get_thread_id();
                    sprintf(buffer,  "%s(%d-%s-
%d)%s",
                    user_id < 10 ? "  " : user_id <
100 ? " " : "",
                    user_id,
                    user_code,
                    thread_id,
                    thread_id < 10 ? " " : "");
    } else {
                    sprintf(buffer,  "%s(%2d-%s)",
                    user_id < 10 ? " " : "", user_id,
user_code);
    }
}

/*
 * err_printf
 *      A var-arg function that appends the current
time and
 *      other data to the print request and sends it
to stderr
 *      if it is not a web client, to a file if it is
 */
void err_printf(char *format, ...)
{
    time_t cur_timet;
    char time_str[30];
    char line_prefix[50];
    va_list ap;

    va_start(ap, format);

    cur_timet = time(&cur_timet);
    strftime(time_str, 29, "%X",
localtime(&cur_timet));

    get_prefix(line_prefix);

    fprintf(ERROUT, "%s %s - ", line_prefix,
time_str);
    vfprintf(ERROUT, format, ap);
    fflush(ERROUT);

    va_end(ap);
}


/*
 *  encina_error_message
 *
 *  Report an encina error message by interpreting it
and writing
 *  it to both the logfile (if any) and to standard
error
 */
void encina_error_message(char *msg, unsigned long n)
{
    char errorMsg[ENCINA_MAX_STATUS_STRING_SIZE];
    encina_StatusToString(n,
ENCINA_MAX_STATUS_STRING_SIZE, errorMsg);
    err_printf("ERROR: %s.  Error code = %s (%d 0x%x)
\n", msg, errorMsg, n, n);
}

int get_time_init()
{
     QueryPerformanceFrequency(&pFreq);
     sFreq=Li2Double(pFreq);
     return 0;
}

int get_local_time(time_type *timeP)
{
    double cur_t;
    LARGE_INTEGER counter;

    QueryPerformanceCounter(&counter);
    cur_t = Li2Double(counter) / sFreq;
    timeP->sec = (long)cur_t;
/*    timeP->usec = ((long)cur_t - timeP->sec) *
1000000;*/
    timeP->usec = (long)((cur_t - timeP->sec) *
1000000);
          return 0;
}

/*
 *  time_diff_ms
 *      Return the difference in miliseconds between
two times
 */
int time_diff_ms(struct timeval *t2, struct timeval
*t1)
{
    int t_diff;

    t_diff = (t2->tv_usec + 1000000 - t1->tv_usec +
500) / 1000 +
              (t2->tv_sec - t1->tv_sec - 1) * 1000;

    return(t_diff);
}

/*
 * perfClntDataInit:
 *    Initialization for the shared file mapping.
 *
 * return: pointer to the shared memory space
 *
 * This routine creates a named mapped memory section
that is used
 * to communicate the TPCC performance data to the
extensible
 * counter DLL for NT perfmon.
 */
total_tran_count_t  *perfClntDataInit()
{
    HANDLE hMappedObject;
    total_tran_count_t  *pClntInfo = NULL;
    TCHAR  szMappedObjectName[] =
TEXT("TPCC_CLNT_COUNTER_BLOCK");

        /* create named section for the performance
data */
        hMappedObject =
CreateFileMapping((HANDLE)0xFFFFFFFF,
                      NULL,
                      PAGE_READWRITE,
                      0,
                      sizeof(total_tran_count_t),
                      szMappedObjectName);
        if (hMappedObject == NULL) {
            err_printf("perfClntDataInit:
CreateFileMapping failed %x\n",
                       GetLastError());
            pClntInfo = NULL;
        } else {
            /* map the section and assign the counter
block pointer
             * to this section of memory
             */
            pClntInfo = (total_tran_count_t *)
MapViewOfFile(hMappedObject,
                            FILE_MAP_ALL_ACCESS,
                            0,
                            0,
                            0);
            if (pClntInfo == NULL) {
                err_printf("perfClntDataInit:
MapViewOfFile failed %x\n",
                           GetLastError());
            }
            else {
                err_printf("perfClntDataInit:
MapViewOfFile success \n");
            }
        }

    return(pClntInfo);
}
```

client_utils.h

```
#ifndef TPCC_CLIENT_UTILS_H
#define TPCC_CLIENT_UTILS_H

#include <stdio.h>
#include <time.h>
#include <dce/rpc.h>
#include <dce/dce_error.h>
#include <encina/encina.h>
#include <stdlib.h>
#include <utils/trace.h>
#include <winsock.h>
#include "mon_client.h"
#include "../include/tpcc_type.h"

extern FILE * errtpcc;
extern FILE *logtpcc;
extern int debug;
extern char log_file_name[];
extern void logprintf( char *format, ...);
extern void err_printf( char *format, ...);
extern void encina_error_message(char *msg, unsigned
long n);
extern int time_diff_ms(struct timeval *t2, struct
timeval *t1);
typedef struct {
    int num;
    int errs;
    double RTtotal[2]; // 1 for server RT and 0 for
client RT
    int RTcount;
} tran_info_t;

/*
 * total_tran_count_t
 *
 * structure that holds the total count of
transaction of each type
 * as well as the reposne times.
 *
 */
typedef struct {
    tran_info_t tran[MAX_TRAN_TYPE + 1];
    int errors;
    double time;
} total_tran_count_t;

/* enc_status_t
 * structure that holds error information
 */
typedef struct {
    int status;
    int line;
    char file[268];
    unsigned long encinaError;
    char errorMsg[ENCINA_MAX_STATUS_STRING_SIZE];
} enc_status_t;

#define FALSE 0
#define TRUE  1

#define DPRINT(args)  if (0) err_printf args


#define CHECK_ENVIRON(str,var)  if (str == NULL) {
fprintf(ERROUT, \
                        "%s environment variable is
not defined.\n",var);  }

#define CHK_STATUS(st, val, _errMsg)
\
     if(st) {
          \
         enc_status.status=val;
\
         strcpy(enc_status.file, __FILE__);
\
         enc_status.line= __LINE__;
\
         enc_status.encinaError = st;
          \
         if(_errMsg)strcpy(enc_status.errorMsg,
_errMsg);       \
         if(st!=1) return;
          \
      }

#define UTIL_IDENT(a)           a
#if        ENCINA_C_ANSI_STRING_TOKEN_SUPPORT
#define UTIL_STRING(a)          # a
#define UTIL_CONCAT(a, b)       a ## b
#else   /* ENCINA_C_ANSI_STRING_TOKEN_SUPPORT */
#define UTIL_STRING(a)          "a"
#define UTIL_CONCAT(a, b)       UTIL_IDENT(a)b
#endif  /* ENCINA_C_ANSI_STRING_TOKEN_SUPPORT */

/*  ENCINA_CALL:  Make fail-fast calls on the various
services.  */
#define ENCINA_CALL(proc_name,call)             \
{                                               \
    unsigned long _status;                      \
    ENCINA_CALL_RC(proc_name,call,_status);     \
    if (_status) exit_program(_status);         \
}


#define ENCINA_CALL_RC(proc_name,call,rc)
\
{
\
    char _errorMsg[ENCINA_MAX_STATUS_STRING_SIZE];
\
    DPRINT(("ENCINA_CALL_RC: before call %s\n",
proc_name));                            \
    rc = (call);
\
    DPRINT(("ENCINA_CALL_RC: after call %s\n",
proc_name));                                      \
    if (rc)  {
\
        encina_StatusToString(rc,
ENCINA_MAX_STATUS_STRING_SIZE,        \
                              _errorMsg);
\
        err_printf( "%x \n", rc);
\
        err_printf( "%s \n", _errorMsg);
\
        err_printf( "%s \n", proc_name);
\
    }
\
}

void err_printf(char *format, ...);
void encina_error_message(char *msg, unsigned long
n);
int get_time_init();
int get_local_time(time_type *timeP);
int time_diff_ms(struct timeval *t2, struct timeval
*t1);

#endif /*  TPCC_CLIENT_UTILS_H  */
```

databuf.h

```
/*
```

```
 *     databuf.h
 *
 * $Revision: 1.1 $
 * $Date: 1998/11/06 21:10:11 $
 * $Log:  databuf.h,v $
 * Revision 4.2  95/05/16  10:55:31  10:55:31  tpcc
(TPCC Benchmark)
 * Added necessary RCS ident strings
 *
 * Revision 4.1  95/05/09  15:21:02  15:21:02  strue
(Scott Truesdale)
 * New code from Transarc - initial version
 *
 * Revision 3.2  95/04/03  17:43:09  17:43:09  strue
(Scott Truesdale)
 * Changes from Transarc - added sql error handling
in client; cleaned up debug handling with macros;
added check on db paramters via call to server.
 *
 * Revision 3.1  95/04/03  15:10:30  15:10:30  strue
(Scott Truesdale)
 * Base of rev 3 - shipped to transarc
 *
 *
 *
 *
 *  $TALog: databuf.h,v $
 * Revision 1.1  1998/11/06  21:10:11  dongfeng
 * - Move all files common to client and server to
tpcc/common
 *   directory
 * [added by delta dongfeng-23677-TPCC-new-directory-
structures, r1.1]
 *
 * Revision 1.3  1998/10/22  15:33:04  wenjian
 * Make changes to Encina server code to connect with
SQL server and add
 * callsql.c and sql directory.
 *
 * Add ERR_BAD_ITEM_ID, which is returned by SLQnew
and same as INVALID_NEWO
 * [from r1.2 by delta wenjian-23529-TPCC-integrate-
with-SQL-server, r1.1]
 *
 * Revision 1.2  1998/01/23  15:07:47  oz
 * - Updated the SP TPCC directory to the latest
files used
 *   during the SP tpcc audit.
 * [from r1.1 by delta oz-20774-TPCC-update-to-
latest-SP-version-11-27, r1.1]
 *
 * Revision 1.1  1997/04/20  11:57:57  oz
 * - This is the code base modified at IBM
Poughkeepsie
 *   by Ofer Zajicek and Radha Sivaramakrishnan for
the
 *   SP scaling test for TPCC.
 * [added by delta oz-19782-TPCC-add-ibm-sp-code,
r1.1]
 *
 * Revision 1.31  1995/10/30  19:10:54  oz
 * [merge of changes from 1.29 to 1.30 into 1.27]
 *
 * Revision 1.30  1995/10/27  15:41:30  oz
 * - Modified the tpc-c code to work with the new
informix
 *   sql code that is in ex_trans.ec
 * [from r1.29 by delta oz-16761-TPCC-modify-code-to-
work-with-oracle, r1.1]
 *
 * Revision 1.27  1995/10/20  18:44:30  ctipper
 * [merge of changes from 1.17 to 1.25 into 1.22]
 *
 * Revision 1.25  1995/10/20  18:15:34  ctipper
 * Incorporate changes per code review.
 *
 * - add DISTRIBUTED_TRAN_FAILED,
TPCC_DB_INFO_PARTIAL, and
 * TPCC_DB_INFO_FAILED error codes to tpcc_rc_t
 * - got rid of MAX_NUM_SERVERS variables
 * [from r1.23 by delta ctipper-16547-TPCC-more-
distributed-trans, r1.2]
 *
 * Revision 1.23  1995/10/13  17:00:26  ctipper
 * This delta encompasses all changes necessary to do
distributed, XA
 * transactions with the TPCC benchmark. This
includes the changes
 * necessary to build with Informix version 6.
 *
 * Each client still talks to only one server,
however, if a distributed
 * transaction is necessary, the client sends the
request to a different
 * interface of that server which then forwards all
or part of the
 * request on to the appropriate remote server.
 *
 * - added new error codes to the tpcc_rc_t
enumeration.
 * - defined MAX_NUM_SERVERS to be 10
 * [from r1.19 by delta ctipper-16547-TPCC-more-
distributed-trans, r1.1]
 *
 * Revision 1.19  1995/09/20  21:02:39  oz
 * -Corrected code for the payment transaction
 * - The distributed case now no longer uses
 *   stored procedures
 * [from r1.18 by delta oz-16547-TPCC-add-
distributed-transactions, r1.2]
 *
 * Revision 1.18  1995/09/20  17:51:10  oz
 * - Added distributed transactions for the new order
and
 *   payment transaction
 *
 * - Added new error codes
 * [from r1.17 by delta oz-16547-TPCC-add-
distributed-transactions, r1.1]
 *
 * Revision 1.22  1995/10/02  20:31:07  oz
 * - Corrected definition of ERROR()
 * [from r1.21 by delta oz-16638-tpcc-modify-
terminal-for-RTE, r1.3]
 *
 * Revision 1.21  1995/10/02  18:51:45  oz
 * - Added definitions needed for utils.c and
liberty.c
 * [from r1.20 by delta oz-16638-tpcc-modify-
terminal-for-RTE, r1.2]
 *
 * Revision 1.20  1995/10/02  15:52:35  oz
 * - Modified the TPC-C benchmark to be compatible
with the RTE.
 * - There are now 3 terminal processes:
 *     emulator: the old terminal process with a
built in
 *               simple emulator
 *     curses: An interactive terminal process using
curses
 *     liberty: An interactive terminal process to be
used with
 *              the RTE compatible with the liberty
freedom terminal.
 *
 * - Define TRUE and FALSE only if they are not
already defined.
 *   (curses.h defines TRUE)
 * - Removed READ_TO_DATE and YEAR_TO_SECOND
 * - Added term_type_t
 * - Added
 *       GOOD_INPUT (0)
 *       WRONG_INPUT (10)
 * [from r1.17 by delta oz-16638-tpcc-modify-
terminal-for-RTE, r1.1]
 *
 * Revision 1.17  1995/07/28  15:28:23  oz
 * - Added a -null and -no_marshalling option to TPCC
 *
 * - Added INVALID_TRAN_TYPE return code
 * [from r1.16 by delta oz-16070-TPCC-add-null-and-
marshalling-test, r1.1]
 *
 * Revision 1.16  1995/07/18  17:02:38  oz
 * - Added a DCE_ERROR error code
 * [from r1.15 by delta oz-15938-TPCC-add-dce-only-
client, r1.1]
 *
 * Revision 1.15  1995/05/22  19:50:48  shl
 * [merge of changes from 1.12 to 1.13 into 1.14]
 *
 * Revision 1.13  1995/05/18  15:11:27  oz
 * [from r1.12 by delta oz-15290-TPCC-incorporate-hp-
drop-of-05-16-95, r1.1]
 *
 * Revision 1.14  1995/05/22  17:26:35  ctipper
 * [merge of changes from 1.5 to 1.9 into 1.11]
 *
 * [*** log entries omitted ***]
 *
 */

#ifndef __TPCC_DATABUF_H__
#define __TPCC_DATABUF_H__

#define I_NAME_LEN      24
#define I_DATA          50
#define W_NAME_LEN      10
#define ADDR_LEN        20
```

```
#define STATE_LEN       2
#define ZIP_LEN         9
#define DIST_INFO_LEN   24
#define S_DATA_LEN      50
#define D_NAME_LEN      10
#define H_DATA_LEN      24
#define CARRIER_LEN     2
#define C_LAST_LEN            17
#define C_MID_LEN       2
#define PHONE_LEN       16
#define CREDIT_LEN      2
#define C_DATA_LEN     500
#define BC_DTA_LEN  23

#define YEAR_TO_DATE   1
#define YEAR_TO_SECOND 2

#define ERROR(x) fprintf(stderr,"Error:
%s\n",#x),exit(11)

#define MAX_STR_LEN     255
#define MAX_OL                15

#ifndef TRUE
#define TRUE    1
#endif
#ifndef FALSE
#define FALSE   0
#endif

#define CANCEL             -1

#define DATETIME_LEN    19

#define D_PER_W         10

#define COLLECTOR   1                   /* ctipper
5/3/95 */

#define ERR_BAD_ITEM_ID  1  /* copied from sql/tpcc.h
*/
#define RPC_ERROR                -2
#define SUCCESS_CODE                        0

#define CHAR_NULL       '\0'            /* strue
1/23/95 */

typedef enum {
    liberty_term,
    curses_term,
    emulator_term
} term_type_t;

typedef enum {
    GOOD_INPUT = 0,

    SQL_ERROR = 2,
    DCE_ERROR = 4,
    NO_SUCH_LAST_NAME = 5,
    INVALID_TRAN_TYPE = 6,
    INVALID_HANDLE = 7,

    WRONG_INPUT = 10,
```

```

    DISTRIBUTED_TRAN_FAILED = 15,

    TPCC_DB_INFO_PARTIAL = 20,
    TPCC_DB_INFO_FAILED,

    TPCC_ERROR_BEGIN_NEWO = 110,

    TPCC_ERROR_DECL_NEWO_SEL_ITEM,
    TPCC_ERROR_OPEN_NEWO_SEL_ITEM,
    TPCC_ERROR_OPEN_DIST_NEWO_SEL_ITEM,
    TPCC_ERROR_FETCH_NEWO_SEL_ITEM,
    TPCC_ERROR_FETCH_DIST_NEWO_SEL_ITEM,
    TPCC_ERROR_PREP_NEWO_SEL_STCK,
    TPCC_ERROR_DECL_NEWO_SEL_STCK,
    TPCC_ERROR_OPEN_NEWO_SEL_STCK,
    TPCC_ERROR_OPEN_DIST_NEWO_SEL_STCK,
    TPCC_ERROR_FETCH_NEWO_SEL_STCK,
    TPCC_ERROR_FETCH_DIST_NEWO_SEL_STCK,
    TPCC_ERROR_NEWO_SELECT,
    TPCC_ERROR_NEWO_UPD_STCK,
    TPCC_ERROR_DIST_NEWO_UPD_STCK,
    TPCC_ERROR_NEWO_SELECT_2,
    TPCC_ERROR_DECL_NEWO_SEL_CUST,
    TPCC_ERROR_OPEN_NEWO_SEL_CUST,
    TPCC_ERROR_OPEN_DIST_NEWO_SEL_CUST,
    TPCC_ERROR_FETCH_NEWO_SEL_CUST,
    TPCC_ERROR_FETCH_DIST_NEWO_SEL_CUST,
    TPCC_ERROR_DECL_NEWO_SEL_DIST,
    TPCC_ERROR_OPEN_NEWO_SEL_DIST,
    TPCC_ERROR_OPEN_DIST_NEWO_SEL_DIST,
    TPCC_ERROR_FETCH_NEWO_SEL_DIST,
    TPCC_ERROR_FETCH_DIST_NEWO_SEL_DIST,
    TPCC_ERROR_PREP_NEWO_INS_OL,
    TPCC_ERROR_DECL_NEWO_INS_OL,
    TPCC_ERROR_OPEN_NEWO_INS_OL,
    TPCC_ERROR_OPEN_DIST_NEWO_INS_OL,
    TPCC_ERROR_PUT_NEWO_INS_OL,
    TPCC_ERROR_PUT_DIST_NEWO_INS_OL,
    TPCC_ERROR_DECL_NEWO_SEL_WARE,
    TPCC_ERROR_OPEN_NEWO_SEL_WARE,
    TPCC_ERROR_OPEN_DIST_NEWO_SEL_WARE,
    TPCC_ERROR_FETCH_NEWO_SEL_WARE,
    TPCC_ERROR_FETCH_DIST_NEWO_SEL_WARE,
    TPCC_ERROR_EXECUTE_NEWO_UPD_INS,
    TPCC_ERROR_UPDATE_NEWO_NEXT_OID,
    TPCC_ERROR_PREP_NEWO_INS,
    TPCC_ERROR_EXECUTE_DIST_NEWO_INS,
    TPCC_ERROR_EXECUTE_NEWO_COMMIT,
    TPCC_ERROR_ROLLBACK_NEWO,
    TPCC_ERROR_REMOTE_OL_SELECT,
    TPCC_ERROR_REMOTE_OL_UPDATE,

    TPCC_ERROR_OPEN_ORDS_CNT_CID = 200,
    TPCC_ERROR_FETCH_ORDS_CNT_CID,
    TPCC_ERROR_OPEN_ORDS_SEL_CLAST,
    TPCC_ERROR_FETCH_ORDS_SEL_CLAST,
    TPCC_ERROR_OPEN_ORDS_SEL_CID,
    TPCC_ERROR_FETCH_ORDS_SEL_CID,
    TPCC_ERROR_OPEN_ORDS_SEL_OLDORD,
    TPCC_ERROR_FETCH_ORDS_OLDORD,
    TPCC_ERROR_OPEN_ORDS_SEL_OL,
    TPCC_ERROR_FETCH_ORDS_SEL_OL,
```

```
    TPCC_ERROR_EXECUTE_ORDS_COMMIT,

    TPCC_ERROR_OPEN_DELIVERY_OLDEST_OID = 300,
    TPCC_ERROR_FETCH_DELIVERY_OLDEST_OID,
    TPCC_ERROR_EXECUTE_DELIVERY_COMMIT,
    TPCC_ERROR_OPEN_DELIVERY_SEL_ORD,
    TPCC_ERROR_FETCH_DELIVERY_SEL_ORD,
    TPCC_ERROR_OPEN_DELIVERY_SEL_SUM_OL,
    TPCC_ERROR_FETCH_DELIVERY_SEL_SUM_OL,
    TPCC_ERROR_EXECUTE_DELIVERY_EXEC_DVRY,
    TPCC_ERROR_SELECT_DELIVERY_ORDER_ID,
    TPCC_ERROR_SELECT_DELIVERY_CARRIER_ID,
    TPCC_ERROR_SELECT_DELIVERY_BALANCE,

    TPCC_ERROR_OPEN_STOCKLEVEL_SEL_OID = 400,
    TPCC_ERROR_FETCH_STOCKLEVEL_SEL_OID,
    TPCC_ERROR_OPEN_STOCKLEVEL_CNT_SID,
    TPCC_ERROR_FETCH_STOCKLEVEL_CNT_SID,
    TPCC_ERROR_OPEN_STOCKLEVEL_FIND,
    TPCC_ERROR_FETCH_STOCKLEVEL_FIND,
    TPCC_ERROR_EXECUTE_STOCKLEVEL_COMMIT,

    TPCC_ERROR_OPEN_PAYMENT_CNT_CID = 500,
    TPCC_ERROR_FETCH_PAYMENT_CNT_CID,
    TPCC_ERROR_OPEN_PAYMENT_SEL_CLAST,
    TPCC_ERROR_FETCH_PAYMENT_SEL_CLAST,
    TPCC_ERROR_OPEN_PAYMENT_SEL_CID,
    TPCC_ERROR_FETCH_PAYMENT_SEL_CID,
    TPCC_ERROR_DECL_PAYMENT_SEL_DIST,
    TPCC_ERROR_OPEN_PAYMENT_SEL_DIST,
    TPCC_ERROR_OPEN_DIST_PAYMENT_SEL_DIST,
    TPCC_ERROR_FETCH_PAYMENT_SEL_DIST,
    TPCC_ERROR_FETCH_DIST_PAYMENT_SEL_DIST,
    TPCC_ERROR_DECL_PAYMENT_SEL_WARE,
    TPCC_ERROR_OPEN_PAYMENT_SEL_WARE,
    TPCC_ERROR_OPEN_DIST_PAYMENT_SEL_WARE,
    TPCC_ERROR_FETCH_PAYMENT_SEL_WARE,
    TPCC_ERROR_FETCH_DIST_PAYMENT_SEL_WARE,
    TPCC_ERROR_EXECUTE_PAYMENT_UPD_CUST_LAST,
    TPCC_ERROR_EXECUTE_PAYMENT_UPD_CUST_ID,
    TPCC_ERROR_COMMIT_PAYMENT_UPD_CUST,
    TPCC_ERROR_SELECT_PAYMENT_W_YTD,
    TPCC_ERROR_SELECT_PAYMENT_D_YTD,
    TPCC_ERROR_BEGIN_PAYMENT,
    TPCC_ERROR_EXECUTE_PAYMENT_COMMIT,
    TPCC_ERROR_PAYMENT_UPD_CUST_BY_NAME,
    TPCC_ERROR_PAYMENT_UPD_CUST_BY_ID,
    TPCC_ERROR_PAYMENT_UPDATE_DIST,
    TPCC_ERROR_PAYMENT_UPDATE_WH,
    TPCC_ERROR_PAYMENT_INSERT_HISTORY,
    TPCC_ERROR_EXECUTE_PAYMENT_WH_DIST

} tpcc_rc_t;

typedef enum {
    TPCC_DEADLOCK_MSG = 10,
    TPCC_RETRY_MSG
} tpcc_msg_t;

#endif /* __TPCC_DATABUF_H__ */
```

databuf.h.new

```
/*
 *     databuf.h
 */

#ifndef __TPCC_DATABUF_H__
#define __TPCC_DATABUF_H__

#define I_NAME_LEN      24
#define I_DATA          50
#define W_NAME_LEN      10
#define ADDR_LEN        20
#define STATE_LEN       2
#define ZIP_LEN         9
#define DIST_INFO_LEN   24
#define S_DATA_LEN      50
#define D_NAME_LEN      10
#define H_DATA_LEN      24
#define CARRIER_LEN     2
#define C_LAST_LEN            17
#define C_MID_LEN       2
#define PHONE_LEN       16
#define CREDIT_LEN      2
/* #define C_DATA_LEN     500 */
#define BC_DTA_LEN  23

#define YEAR_TO_DATE   1
#define YEAR_TO_SECOND 2

#define MAX_STR_LEN     255
#define MAX_OL                15

#ifndef TRUE
#define TRUE    1
#endif
#ifndef FALSE
#define FALSE   0
#endif

#define CANCEL             -1

/* #define DATETIME_LEN    19 */

#define D_PER_W         10

#define COLLECTOR   1                   /* ctipper
5/3/95 */

#define ERR_BAD_ITEM_ID  1  /* copied from sql/tpcc.h
*/
#define RPC_ERROR                 -2
#define SUCCESS_CODE                        0

#define CHAR_NULL       '\0'            /* strue
1/23/95 */

typedef enum {
    liberty_term,
    curses_term,
    emulator_term
} term_type_t;

typedef enum {
    TPCC_SUCCESS = 0,
    GOOD_INPUT = 0,

    INVALID_NEWO = 100,
    SQL_ERROR = 2,
    TRPC_ERROR = 3,
    DCE_ERROR = 4,
    NO_SUCH_LAST_NAME = 5,
    INVALID_TRAN_TYPE = 6,
    INVALID_HANDLE = 7,

    WRONG_INPUT = 10,

    DISTRIBUTED_TRAN_FAILED = 15,

    TPCC_DB_INFO_PARTIAL = 20,
    TPCC_DB_INFO_FAILED,

    TPCC_ERROR_BEGIN_NEWO = 110,

    TPCC_ERROR_DECL_NEWO_SEL_ITEM,
    TPCC_ERROR_OPEN_NEWO_SEL_ITEM,
    TPCC_ERROR_OPEN_DIST_NEWO_SEL_ITEM,
    TPCC_ERROR_FETCH_NEWO_SEL_ITEM,
    TPCC_ERROR_FETCH_DIST_NEWO_SEL_ITEM,
    TPCC_ERROR_PREP_NEWO_SEL_STCK,
    TPCC_ERROR_DECL_NEWO_SEL_STCK,
    TPCC_ERROR_OPEN_NEWO_SEL_STCK,
    TPCC_ERROR_OPEN_DIST_NEWO_SEL_STCK,
    TPCC_ERROR_FETCH_NEWO_SEL_STCK,
    TPCC_ERROR_FETCH_DIST_NEWO_SEL_STCK,
    TPCC_ERROR_NEWO_SELECT,
    TPCC_ERROR_NEWO_UPD_STCK,
    TPCC_ERROR_DIST_NEWO_UPD_STCK,
    TPCC_ERROR_NEWO_SELECT_2,
    TPCC_ERROR_DECL_NEWO_SEL_CUST,
    TPCC_ERROR_OPEN_NEWO_SEL_CUST,
    TPCC_ERROR_OPEN_DIST_NEWO_SEL_CUST,
    TPCC_ERROR_FETCH_NEWO_SEL_CUST,
    TPCC_ERROR_FETCH_DIST_NEWO_SEL_CUST,
    TPCC_ERROR_DECL_NEWO_SEL_DIST,
    TPCC_ERROR_OPEN_NEWO_SEL_DIST,
    TPCC_ERROR_OPEN_DIST_NEWO_SEL_DIST,
    TPCC_ERROR_FETCH_NEWO_SEL_DIST,
    TPCC_ERROR_FETCH_DIST_NEWO_SEL_DIST,
    TPCC_ERROR_PREP_NEWO_INS_OL,
    TPCC_ERROR_DECL_NEWO_INS_OL,
    TPCC_ERROR_OPEN_NEWO_INS_OL,
    TPCC_ERROR_OPEN_DIST_NEWO_INS_OL,
    TPCC_ERROR_PUT_NEWO_INS_OL,
    TPCC_ERROR_PUT_DIST_NEWO_INS_OL,
    TPCC_ERROR_DECL_NEWO_SEL_WARE,
    TPCC_ERROR_OPEN_NEWO_SEL_WARE,
    TPCC_ERROR_OPEN_DIST_NEWO_SEL_WARE,
    TPCC_ERROR_FETCH_NEWO_SEL_WARE,
    TPCC_ERROR_FETCH_DIST_NEWO_SEL_WARE,
    TPCC_ERROR_EXECUTE_NEWO_UPD_INS,
    TPCC_ERROR_UPDATE_NEWO_NEXT_OID,
    TPCC_ERROR_PREP_NEWO_INS,
    TPCC_ERROR_EXECUTE_DIST_NEWO_INS,
    TPCC_ERROR_EXECUTE_NEWO_COMMIT,
    TPCC_ERROR_ROLLBACK_NEWO,
    TPCC_ERROR_REMOTE_OL_SELECT,
    TPCC_ERROR_REMOTE_OL_UPDATE,

    TPCC_ERROR_OPEN_ORDS_CNT_CID = 200,
    TPCC_ERROR_FETCH_ORDS_CNT_CID,
    TPCC_ERROR_OPEN_ORDS_SEL_CLAST,
    TPCC_ERROR_FETCH_ORDS_SEL_CLAST,
    TPCC_ERROR_OPEN_ORDS_SEL_CID,
    TPCC_ERROR_FETCH_ORDS_SEL_CID,
    TPCC_ERROR_OPEN_ORDS_SEL_OLDORD,
    TPCC_ERROR_FETCH_ORDS_OLDORD,
    TPCC_ERROR_OPEN_ORDS_SEL_OL,
    TPCC_ERROR_FETCH_ORDS_SEL_OL,
    TPCC_ERROR_EXECUTE_ORDS_COMMIT,

    TPCC_ERROR_OPEN_DELIVERY_OLDEST_OID = 300,
    TPCC_ERROR_FETCH_DELIVERY_OLDEST_OID,
    TPCC_ERROR_EXECUTE_DELIVERY_COMMIT,
    TPCC_ERROR_OPEN_DELIVERY_SEL_ORD,
    TPCC_ERROR_FETCH_DELIVERY_SEL_ORD,
    TPCC_ERROR_OPEN_DELIVERY_SEL_SUM_OL,
    TPCC_ERROR_FETCH_DELIVERY_SEL_SUM_OL,
    TPCC_ERROR_EXECUTE_DELIVERY_EXEC_DVRY,
    TPCC_ERROR_SELECT_DELIVERY_ORDER_ID,
    TPCC_ERROR_SELECT_DELIVERY_CARRIER_ID,
    TPCC_ERROR_SELECT_DELIVERY_BALANCE,

    TPCC_ERROR_OPEN_STOCKLEVEL_SEL_OID = 400,
    TPCC_ERROR_FETCH_STOCKLEVEL_SEL_OID,
    TPCC_ERROR_OPEN_STOCKLEVEL_CNT_SID,
    TPCC_ERROR_FETCH_STOCKLEVEL_CNT_SID,
    TPCC_ERROR_OPEN_STOCKLEVEL_FIND,
    TPCC_ERROR_FETCH_STOCKLEVEL_FIND,
    TPCC_ERROR_EXECUTE_STOCKLEVEL_COMMIT,

    TPCC_ERROR_OPEN_PAYMENT_CNT_CID = 500,
    TPCC_ERROR_FETCH_PAYMENT_CNT_CID,
    TPCC_ERROR_OPEN_PAYMENT_SEL_CLAST,
    TPCC_ERROR_FETCH_PAYMENT_SEL_CLAST,
    TPCC_ERROR_OPEN_PAYMENT_SEL_CID,
    TPCC_ERROR_FETCH_PAYMENT_SEL_CID,
    TPCC_ERROR_DECL_PAYMENT_SEL_DIST,
    TPCC_ERROR_OPEN_PAYMENT_SEL_DIST,
    TPCC_ERROR_OPEN_DIST_PAYMENT_SEL_DIST,
    TPCC_ERROR_FETCH_PAYMENT_SEL_DIST,
    TPCC_ERROR_FETCH_DIST_PAYMENT_SEL_DIST,
    TPCC_ERROR_DECL_PAYMENT_SEL_WARE,
    TPCC_ERROR_OPEN_PAYMENT_SEL_WARE,
    TPCC_ERROR_OPEN_DIST_PAYMENT_SEL_WARE,
    TPCC_ERROR_FETCH_PAYMENT_SEL_WARE,
    TPCC_ERROR_FETCH_DIST_PAYMENT_SEL_WARE,
    TPCC_ERROR_EXECUTE_PAYMENT_UPD_CUST_LAST,
    TPCC_ERROR_EXECUTE_PAYMENT_UPD_CUST_ID,
    TPCC_ERROR_COMMIT_PAYMENT_UPD_CUST,
    TPCC_ERROR_SELECT_PAYMENT_W_YTD,
    TPCC_ERROR_SELECT_PAYMENT_D_YTD,
    TPCC_ERROR_BEGIN_PAYMENT,
    TPCC_ERROR_EXECUTE_PAYMENT_COMMIT,
    TPCC_ERROR_PAYMENT_UPD_CUST_BY_NAME,
    TPCC_ERROR_PAYMENT_UPD_CUST_BY_ID,
    TPCC_ERROR_PAYMENT_UPDATE_DIST,
    TPCC_ERROR_PAYMENT_UPDATE_WH,
    TPCC_ERROR_PAYMENT_INSERT_HISTORY,
    TPCC_ERROR_EXECUTE_PAYMENT_WH_DIST

} tpcc_rc_t;

typedef enum {
    TPCC_DEADLOCK_MSG = 10,
    TPCC_RETRY_MSG
} tpcc_msg_t;

#endif /* __TPCC_DATABUF_H__ */
```

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_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
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
```

delivery.h

```
#ifndef TRANSARC_delivery_h
#define TRANSARC_delivery_h

#include <trpc/trpc.h>
#include "_delivery.h"

#include <encina/c_prologue.h>

#if defined(BUILDDLL)
#define DLLEXPORT __declspec( dllexport )
#else
#define DLLEXPORT extern
#endif

#ifndef ENCINA_STUB_CALLING
#define ENCINA_STUB_CALLING ENCINA_RPC_CALLING
#endif

#define delivery_v1_0_c_ifspec
          _delivery_v1_0_c_ifspec
#define delivery_v1_0_s_ifspec
          _delivery_v1_0_s_ifspec

typedef struct delivery_v1_0_epv {
void (ENCINA_STUB_CALLING *impTPCCDelivery) (
#ifdef IDL_PROTOTYPES

                    idl_long_int length,
                    idl_char *dataP,
                    data_header *headerP,
                    trpc_status_t *trpcStatus
#endif
);

} delivery_v1_0_epv_t;

DLLEXPORT void ENCINA_STUB_CALLING impTPCCDelivery (
#ifdef IDL_PROTOTYPES

                    idl_long_int length,
                    idl_char *dataP,
                    data_header *headerP,
                    trpc_status_t *trpcStatus
#endif
);

trpc_handle_t        ENCINA_CALLING
mon_handle_t_tranBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

void       ENCINA_CALLING mon_handle_t_tranUnBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_handle_t       trpcHandle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

trpc_handle_t        ENCINA_CALLING
mon_handle_t_tranBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

void       ENCINA_CALLING mon_handle_t_tranUnBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_handle_t       trpcHandle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );
extern delivery_v1_0_epv_t
          delivery_v1_0_client_epv;
extern _delivery_v1_0_epv_t
          delivery_v1_0_manager_epv;
extern rpc_mgr_epv_t
          delivery_v1_0_mgr_epv;

#include <encina/c_epilogue.h>
#endif /* TRANSARC_delivery_h */
```

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 */
```

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;}
};
```

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\\Param
eters", 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\\Paramete
rs", 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\\Param
eters", 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\\Paramete
rs", 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\PathWWW
Root 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.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.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.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_RI
GHT |
                    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_BORD
ER,
                    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_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;
}
```

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\spinlock.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\spinlock.lib
..\common\txnlog\lib\debug\error.lib
..\common\txnlog\lib\debug\txnlog.lib wsock32.lib
kernel32.lib user32.lib gdi32.lib winspool.lib
comdlg32.lib advapi32.lib shell32.lib ole32.lib
oleaut32.lib uuid.lib odbc32.lib odbccp32.lib /nologo
/subsystem:windows /dll /debug /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_dl"
# PROP BASE Intermediate_Dir "isapi_dl"
# PROP BASE Ignore_Export_Lib 0
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir ".\bin"
# PROP Intermediate_Dir ".\obj"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MDd /W3 /GX /Zi /Od /D
"_DEBUG" /D "WIN32" /D "_WINDOWS" /FR /YX /FD /Gh /c
# ADD CPP /nologo /MD /W3 /GX /Zi /O2 /D "NDEBUG" /D
"ICECAP" /D "WIN32" /D "_WINDOWS" /FR /YX /FD /Gh /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o
"NUL" /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o "NUL"
/win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.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 BASE LINK32 /profile /pdb:none
# ADD LINK32 icap.lib
..\common\txnlog\lib\release\rtetime.lib
..\common\txnlog\lib\release\spinlock.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
```

license.txt

```
END-USER LICENSE AGREEMENT FOR
MICROSOFT TPC-C BENCHMARK KIT

IMPORTANT READ CAREFULLY: This Microsoft End-
User License Agreement (EULA) is a legal agreement
between you (either an individual or a single entity)
and
Microsoft Corporation for the Microsoft software
product
identified above, which includes computer software
and may
include associated media, printed materials, and
online or
electronic documentation (SOFTWARE PRODUCT). By
installing, copying, or otherwise using the SOFTWARE
PRODUCT, you agree to be bound by the terms of this
EULA.
If you do not agree to the terms of this Agreement,
you are not
authorized to use the SOFTWARE PRODUCT.

The SOFTWARE PRODUCT is protected by copyright laws
and international copyright treaties, as well as
other
intellectual property laws and treaties. The SOFTWARE
PRODUCT is licensed, not sold.

1. GRANT OF LICENSE. This EULA grants you the
following rights:
    Use. Microsoft grants to you the right to install
and use
copies of the SOFTWARE PRODUCT only in conjunction
with validly licensed copies of Microsoft SQL Server
and/or
Microsoft Windows NT Server software.  You may also
make
copies of the SOFTWARE PRODUCT for backup and
archival purposes.

2.  RESTRICTIONS.
--You must maintain all copyright notices on all
copies of the
SOFTWARE PRODUCT.
--You may not distribute copies of the SOFTWARE
PRODUCT to third parties.
--You may not rent, lease or lend the SOFTWARE
PRODUCT.
--You may not use the SOFTWARE PRODUCT or any
derivative works thereof to internally test database
management system software other than Microsoft SQL
Server and/or operating system software other than
Microsoft
Windows NT.
```

-- You may not disclose the results of any benchmark tests using the SOFTWARE PRODUCT to any third party without Microsoft's prior written approval.
-- You may not disclose or provide the SOFTWARE PRODUCT or any derivative works thereof, or any information relating to the SOFTWARE PRODUCT (including the existence of the SOFTWARE PRODUCT or the results of use and testing or benchmark testing), to any third party without Microsoft's written permission.

3. TERMINATION. Without prejudice to any other rights, Microsoft may terminate this EULA if you fail to comply with the terms and conditions of this EULA. In such event, you must destroy all copies of the SOFTWARE PRODUCT.

4. COPYRIGHT. All title and copyrights in and to the SOFTWARE PRODUCT and any copies thereof are owned by Microsoft or its suppliers. All title and intellectual property rights in and to the content which may be accessed through use of the SOFTWARE PRODUCT is the property of the respective content owner and may be protected by applicable copyright or other intellectual property laws and treaties. This EULA grants you no rights to use such content.

5. UPGRADES. If the SOFTWARE PRODUCT is labeled as an upgrade, you must be properly licensed to use a product identified by Microsoft as being eligible for the upgrade in order to use the SOFTWARE PRODUCT. A SOFTWARE PRODUCT labeled as an upgrade replaces and/or supplements the product that formed the basis for your eligibility for the upgrade. You may use the resulting upgraded product only in accordance with the terms of this EULA.

6. U.S. GOVERNMENT RESTRICTED RIGHTS. The SOFTWARE PRODUCT is provided with RESTRICTED RIGHTS. Use, duplication, or disclosure by the Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013 or subparagraphs (c)(1) and (2) of the Commercial Computer Software Restricted Rights at 48 CFR 52.227-19, as applicable. Manufacturer is Microsoft Corporation/One Microsoft Way/Redmond, WA 98052-6399.

7. EXPORT RESTRICTIONS. You agree that you will not export or re-export the SOFTWARE PRODUCT to any country, person, entity or end user subject to U.S.A. export restrictions. Restricted countries currently include, but are not necessarily limited to Cuba, Iran, Iraq, Libya, North Korea, Syria, and the Federal Republic of Yugoslavia (Serbia and Montenegro, U.N. Protected Areas and areas of Republic of Bosnia and Herzegovina under the control of Bosnian Serb forces). You warrant and represent that neither the U.S.A. Bureau of Export Administration nor any other federal agency has suspended, revoked or denied your export privileges.

8. NO WARRANTY. ANY USE OF THE SOFTWARE PRODUCT IS AT YOUR OWN RISK. THE SOFTWARE PRODUCT IS PROVIDED FOR USE ONLY WITH MICROSOFT SQL SERVER AND/OR MICROSOFT WINDOWS NT SERVER SOFTWARE. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, MICROSOFT AND ITS SUPPLIERS DISCLAIM ALL WARRANTIES AND CONDITIONS, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NONINFRINGEMENT.

9. NO LIABILITY FOR CONSEQUENTIAL DAMAGES. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL MICROSOFT OR ITS SUPPLIERS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR INABILITY TO USE THE SOFTWARE PRODUCT, EVEN IF MICROSOFT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

10. LIMITATION OF LIABILITY. MICROSOFT'S ENTIRE LIABILITY AND YOUR EXCLUSIVE REMEDY UNDER THIS EULA SHALL NOT EXCEED FIVE DOLLARS (US$5.00).

11. MISCELLANEOUS
This EULA is governed by the laws of the State of Washington, U.S.A.
Should you have any questions concerning this EULA, or if you desire to contact Microsoft for any reason, please contact the Microsoft subsidiary serving your country, or write:
Microsoft Sales Information Center/One Microsoft Way/Redmond, WA 98052-6399.

Si vous avez acquis votre produit Microsoft au CANADA, la garantie limit,e suivante vous concerne:

EXCLUSION DE GARANTIES. Microsoft renonce entiŠrement … toute garantie pour le LOGICIEL. Le LOGICIEL et toute autre documentation s'y rapportant sont fournis ® comme tels ¯ sans aucune garantie quelle qu'elle soit, expresse ou implicite, y compris, mais ne se limitant pas aux garanties implicites de la qualit, marchande ou un usage particulier. Le risque total d,coulant de l'utilisation ou de la performance du LOGICIEL est entre vos mains.

RESPONSABILIT□ LIMIT□E. La seule obligation de Microsoft et votre recours exclusif concernant ce contrat n'excŠderont pas cinq dollare (US$5.00).

ABSENCE DE RESPONSABILIT□ POUR LES DOMMAGES INDIRECTS.
Microsoft ou ses fournisseurs ne pourront ˆtre tenus responsables en aucune circonstance de tout dommage quel qu'il soit (y compris mais non de fa‡on limitative les dommages directs ou indirects caus,s par la perte de b,n,fices commerciaux, l'interruption des affaires, la perte d'information commerciale ou toute autre perte p,cuniaire) r,sultant de l'utilisation ou de l'impossibilit, d'utilisation de ce produit, et ce, mˆme si la soci,t, Microsoft a ,t, avis,e de l' ,ventualit, de tels dommages. Certains ,tats/juridictions ne permettent pas l'exclusion ou la limitation de responsabilit, relative aux dommages indirects ou cons,cutifs, et la limitation ci-dessus peut ne pas s'appliquer … votre ,gard. La pr,sente Convention est r,gie par les lois de la province d'Ontario, Canada.
Chacune des parties … la pr,sente reconnaŒt irr,vocablement la comp,tence des tribunaux de la province d'Ontario et consent … instituer tout litige qui pourrait d,couler de la pr,sente

```
auprŠs des tribunaux situ,s dans le district
judiciaire de York,
province d'Ontario.  Au cas o— vous auriez des
questions
concernant cette licence ou que vous d,siriez vous
mettre en
rapport avec Microsoft pour quelque raison que ce
soit,
veuillez contacter la succursale Microsoft desservant
votre
pays, dont l'adresse est fournie dans ce produit, ou
,crire …:
Microsoft Customer Sales and Service, One Microsoft
Way,
Redmond, Washington 98052 6399.
```

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;}
};
```

mon_client.c

```
/*
 *        mon_client.c
 *
 */

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <stdarg.h>
#include <time.h>
#include <pthread.h>
#include <tpm/mon/mon.h>
#include <utils/trace.h>
#include "../include/delivery.h"
#include "../include/neworder.h"
#include "../include/payment.h"
#include "../include/stocklevel.h"
#include "../include/orderstatus.h"
#include "../include/tpcc_type.h"
#include "mon_client.h"
#include "client_utils.h"

extern total_tran_count_t  *perfClntDataInit();
static void read_mon_environment(void);

static char *cellName;
static int envRetrieval = 0;
static int useSecurity = FALSE;
static CRITICAL_SECTION    init_lock;
static total_tran_count_t  *pClientInfo=NULL;  /*
keep stats for the client process */
static num_active_threads = 0;
static int iStatsFrequency = 1;
FILE    *errtpcc;
char    *errFile = "C:/temp/tpcc_encina.out";
enc_status_t enc_status;

#define NewOrder_code    NEWO_TRANS
#define Payment_code     PAYMENT_TRANS
#define OrderStatus_code ORDER_STAT_TRANS
#define Delivery_code    DELIVERY_TRANS
#define StockLevel_code  STOCK_TRANS


#define INT_ENV_VALUE(var, default) \
  (var = getenv(#var) ? atoi(getenv(#var)) : default)

#define PRE_RPC_WORK(headerP, tran, sub_tran) \
        if (iStatsFrequency > 0) \
                    pre_rpc(headerP, tran, sub_tran);
\
          else
                        \
                    (headerP)->stats = 0;
#define POST_RPC_WORK(headerP, tran) \
        if (iStatsFrequency > 0) \
                    post_rpc(headerP, tran)

/*  CALTPCC
 *  Macro to sends 1 RPC and then handles any errors.
 *
 *  The macro takes the name of the RPC (e.g.,
NewOrder)
 *  and makes the RPC by calling the appropriate
function
 *  (e.g., impTPCCNewOrder).
 */
#define
CALLTPCC(name,length,dataP,header,trpcStatusP)
\
{
\

UTIL_CONCAT(impTPCC,name)(length,dataP,&header,trpcSt
atusP);        \
  if (*(trpcStatusP)) {
\
    char msg[100];
\
    sprintf(msg, "TRPC error during impTPCC%s",
UTIL_STRING(name));    \
    header.returncode = TRPC_ERROR;
\
    encina_error_message(msg, *(trpcStatusP));
\
  } else if ((header.returncode != TPCC_SUCCESS) &&
\
             (header.returncode != INVALID_NEWO)) {
\
    char msg[100];
\
    sprintf(msg, "App error during impTPCC%s: ",
UTIL_STRING(name));   \
    encina_error_message(msg, header.returncode);
\
  }
\
}

/*
 *  pre_rpc --   For debug purposes
 *
 *  Called before an RPC is made.
 *  Set the state of the thread and keep track of the
time the RPC is sent.
 *  This is used by the Background thread to report
the state of the client.
 */
```

```
static void pre_rpc(data_header *headerP,
                    int tran_type,
                    int sub_tran_type)
{
    if (iStatsFrequency < 1) {
                    headerP->stats = 0;
    } else {
        int num;
        num = ++ (pClientInfo->tran[tran_type].num);
        headerP->stats = (num % iStatsFrequency==0) ?
1 : 0;
        if (headerP->stats)
                    { /* measure the time for RT */

          get_local_time(&headerP->clnt_start);
                    headerP->srv_start.sec = 0;   /*
initialize the server time */
                    headerP->srv_start.usec = 0;
                    headerP->srv_end.sec = 0;
                    headerP->srv_end.usec = 0;
                    }
    }
}

/*
 *  post_rpc
 *
 *  Called when the RPC returns from the server
 *
 *  Keeps track of the client response time and the
server response time
 *  as well as the state of the thread.  This is used
by the background
 *  debug thread to report the state of the client
 */
static void post_rpc(data_header *headerP,
                         int tran_type)
{
    double time_diff;
    int tran_failed;
    struct timeval start_time, end_time;

    if (headerP->stats)
                    get_local_time(&headerP-
>clnt_end);
    else
                    return;

    /* Store the info for each client.
     * Note: Since we don't use mutex for performance
reason, pClientInfo
     *       may not be accurate if more than one
thread work on the same
     *       data at a same time. But this should
give us reasonable info.
     */
    if ((headerP->returncode == TPCC_SUCCESS) ||
        (headerP->returncode == INVALID_NEWO)) {
      tran_failed = 0;
    } else {
      pClientInfo->tran[tran_type].errs ++;
      pClientInfo->errors ++;
      tran_failed = 1;
```

```
    }
    if (headerP->stats && tran_type <= MAX_TRAN_TYPE
&& tran_type > 0
        && !tran_failed) {
          /* update total server round trip response
time */
            start_time.tv_sec = headerP-
>srv_start.sec;
            start_time.tv_usec = headerP-
>srv_start.usec;
            end_time.tv_sec = headerP->srv_end.sec;
            end_time.tv_usec = headerP->srv_end.usec;
          time_diff = time_diff_ms(&end_time,
&start_time);
          pClientInfo->tran[tran_type].RTtotal[1] +=
time_diff;
            DPRINT(("srv start_time %d.%d, end_time
%d.%d, time_diff %f\n",
                              start_time.tv_sec,
start_time.tv_usec,
                              end_time.tv_sec,
end_time.tv_usec,
                              time_diff));

          /* update total client round trip response
time */
            start_time.tv_sec = headerP-
>clnt_start.sec;
            start_time.tv_usec = headerP-
>clnt_start.usec;
            end_time.tv_sec = headerP->clnt_end.sec;
            end_time.tv_usec = headerP-
>clnt_end.usec;
          time_diff = time_diff_ms(&end_time,
&start_time);
          pClientInfo->tran[tran_type].RTtotal[0] +=
time_diff;
            DPRINT(("clnt start_time %d.%d, end_time
%d.%d, time_diff %f\n",
                              start_time.tv_sec,
start_time.tv_usec,
                              end_time.tv_sec,
end_time.tv_usec,
                              time_diff));

            /* update num for the number of trans
which have RT measured */
      pClientInfo->tran[tran_type].RTcount ++;

    }
}

/*
 *  The following send_*** functions are called from
CTPCC_ENCINA class.
 *
 */

/*
 *  send_new_order
 *        Send a new order request to the server
 */
int send_new_order(long length, unsigned char *dataP)
```

```
{
    trpc_status_t trpcStatus;
    data_header  header;

    PRE_RPC_WORK(&header, NEWO_TRANS, 0);

CALLTPCC(NewOrder,length,dataP,header,&trpcStatus)
    POST_RPC_WORK(&header, NEWO_TRANS);
    if (header.returncode == INVALID_NEWO)
          return TPCC_SUCCESS;
    else
          return header.returncode;
}

/*
 *  send_payment
 *        Send a payment request to the server
 */
int send_payment(long length, unsigned char *dataP)
{
    trpc_status_t trpcStatus;
    data_header  header;

    PRE_RPC_WORK(&header, PAYMENT_TRANS, 0);

CALLTPCC(Payment,length,dataP,header,&trpcStatus);
    POST_RPC_WORK(&header, PAYMENT_TRANS);
    return header.returncode;
}

/*
 *  send_order_status
 *        Send a order status request to the server
 */
int send_order_status(long length, unsigned char
*dataP)
{
    trpc_status_t trpcStatus;
    data_header  header;

    PRE_RPC_WORK(&header, ORDER_STAT_TRANS, 0);

CALLTPCC(OrderStatus,length,dataP,header,&trpcStatus)
;
    POST_RPC_WORK(&header, ORDER_STAT_TRANS);
    return header.returncode;
}

/*
 *  send_delivery
 *        Send a delivery request to the server
 */
int send_delivery(long length, unsigned char *dataP)
{
    trpc_status_t trpcStatus;
    data_header  header;

    PRE_RPC_WORK(&header, DELIVERY_TRANS, 0);

CALLTPCC(Delivery,length,dataP,header,&trpcStatus);
    POST_RPC_WORK(&header, DELIVERY_TRANS);
    return header.returncode;
}
```

```
/*
 *  send_stock_level
 *        Send a stock level request to the server
 */
int send_stock_level(long length, unsigned char
*dataP)
{
    trpc_status_t trpcStatus;
    data_header  header;

    PRE_RPC_WORK(&header, STOCK_TRANS, 0);

CALLTPCC(StockLevel,length,dataP,header,&trpcStatus);
    POST_RPC_WORK(&header, STOCK_TRANS);
    return header.returncode;
}



/*
 *  Enroll the client:
 *        get the necessary handles.
 *  This function should be called only once. Use
static var client_enrolled to control it.
 */
void enroll_client()
{
    static  char  *clientName="tpcc_client";
    unsigned long status ;
    static  int   client_enrolled = 0;
    unsigned32      client_authnLevel;
    unsigned32      client_authzSvc;
    time_type a_time;
          char err_msg[100];

    MUTEX_INIT(&init_lock);
    get_local_time(&a_time);
    srand(a_time.sec ^ a_time.usec);

    MUTEX_LOCK(&init_lock);
    if (client_enrolled) {
          MUTEX_UNLOCK(&init_lock);
                    return;
    }

    /* open output file for tracing */
    errtpcc = fopen(errFile, "w");
    if(!errtpcc)
    {
                    sprintf(err_msg, "Cannot open
file %s", errFile);
                    CHK_STATUS(1,
ERROUT_FILE_NOT_FOUND,err_msg);
    }

    get_time_init();
          // initialize the space for perfmon
    pClientInfo = perfClntDataInit();
    if (pClientInfo == NULL)  // in case something
wrong
          pClientInfo =
malloc(sizeof(total_tran_count_t));
```

```
    memset(pClientInfo, 0,
sizeof(total_tran_count_t));

    read_mon_environment();

    if(!cellName)
          CHK_STATUS(30, CELL_NAME_UNAVAILABLE,
                   "ENCINA_TPM_CELL is not set!");

    if (useSecurity) {
                    client_authnLevel =
rpc_c_protect_level_connect;
                    client_authzSvc =
rpc_c_authz_dce;
    } else {
                    client_authnLevel =
rpc_c_protect_level_none;
                    client_authzSvc =
rpc_c_authz_none;
    }

    if (envRetrieval == 0) {

ENCINA_CALL_RC("mon_RetrieveEnable",mon_RetrieveEnabl
e(FALSE),status);
        CHK_STATUS(status, MON_RETRIEVEENABLE_FAILED,
                   "mon_RetrieveEnable failed");
    }

    err_printf("enroll_client: calling mon_InitClient
\n");

ENCINA_CALL_RC("mon_InitClient",mon_InitClient(client
Name,cellName),status);
    CHK_STATUS(status, MON_INITCLIENT_FAILED,
                 "mon_InitClient failed");

    DPRINT(("mon_SecuritySetDefaults-> authn %d,
authz %d\n",
            client_authnLevel, client_authzSvc));
    ENCINA_CALL_RC("mon_SecuritySetDefaults",

          mon_SecuritySetDefaults(client_authnLevel,c
lient_authzSvc),
                status);
    CHK_STATUS(status, MON_SECURITYSET_FAILED,
               "mon_SecuritySetDefaults failed");


ENCINA_CALL_RC("mon_SetHandleCacheRefreshInterval",

          mon_SetHandleCacheRefreshInterval(300),
status);
    CHK_STATUS(status, MON_SETREFRESHINTERVAL_FAILED,
               "mon_SetHandleCacheRefreshInterval
failed");

    {
        dbInfo_data_t data;
        trpc_status_t trpcStatus;
        /* Get DB Info -- currently id does not do
anything
```

```
           but it will tell us if there is a server
out there.
           Better to know instead of when all the
terminals
           are up and ready
         */
        impTPCCNOInfo(&data, &trpcStatus);
        if (trpcStatus) {
            char msg[100];
            sprintf(msg, "TRPC error during db info
at init.");
            encina_error_message(msg, trpcStatus);
            CHK_STATUS(33,NOINFO_TRPC_ERROR,
                        "TRPC error during db info at
init");
        }
    }

    client_enrolled = 1;
    MUTEX_UNLOCK(&init_lock);
    err_printf("end of enroll_client\n");
}


/*-----------------------------------------------------
-----------*/
/*        Read environment paramaters and registry
entries      */
/*-----------------------------------------------------
-----------*/
static void read_mon_environment()
{
    char *env_str;
    char    *registryKey =
"SOFTWARE\\TransarcCorporation\\TxTpcc";
    HKEY    hKey;
    DWORD   size;
    DWORD   type;
    char    szTmp[256];

    cellName = getenv("ENCINA_TPM_CELL");
    CHECK_ENVIRON(cellName, "ENCINA_TPM_CELL");

    if (env_str = getenv("TPCC_ENV_RETRIEVE")) {
        envRetrieval = atoi(env_str);
    }

    if ( RegOpenKeyEx(HKEY_LOCAL_MACHINE,
registryKey, 0, KEY_READ, &hKey) != ERROR_SUCCESS )
        return;

    size = sizeof(szTmp);
    if ( RegQueryValueEx(hKey, "StatsFrequency", 0,
&type, szTmp, &size)==ERROR_SUCCESS)
        iStatsFrequency = atoi(szTmp);

    RegCloseKey(hKey);
}
```

mon_client.h

```
/*
 *        mon_client.h
 *
 */

#ifndef MON_CLIENT_H
#define MON_CLIENT_H

#define MUTEX_T CRITICAL_SECTION
#define MUTEX_LOCK(a) EnterCriticalSection(a)
#define MUTEX_UNLOCK(a) LeaveCriticalSection(a)
#define MUTEX_INIT(mut)
InitializeCriticalSection(mut)
#define MUTEX_DESTROY(mut) DeleteCriticalSection(mut)
#define ERROUT errtpcc

/*initialization status */
#define INIT_SUCCESS 0
#define INIT_FAILED  1
#define CELL_NAME_UNAVAILABLE 2
#define MON_RETRIEVEENABLE_FAILED 3
#define MON_INITCLIENT_FAILED 4
#define MON_SECURITYSET_FAILED 5
#define MON_SETREFRESHINTERVAL_FAILED 6
#define NOINFO_TRPC_ERROR 7
#define ENROLL_CLIENT_EXCEPTION 8
#define ERROUT_FILE_NOT_FOUND 9
#define LOG_FILE_NOT_FOUND 10
#define TPCC_KEY_NOT_FOUND 11
#define TERM_ALLOC_FAILED 12

/*
 *  Routines and declarations that are common to all
clients
 */
#if defined(__cplusplus)
extern "C" {
#endif
int send_new_order(long, unsigned char *);
int send_payment(long, unsigned char *);
int send_order_status(long, unsigned char *);
int send_delivery(long, unsigned char *);
int send_stock_level(long, unsigned char *);
void enroll_client();
#if defined(__cplusplus)
}
#endif

#endif  /*  MON_CLIENT_H  */
```

neworder.h

```
#ifndef TRANSARC_neworder_h
#define TRANSARC_neworder_h

#include <trpc/trpc.h>

#include "_neworder.h"

#include <encina/c_prologue.h>

#if defined(BUILDDLL)
#define DLLEXPORT __declspec( dllexport )
#else
#define DLLEXPORT extern
#endif

#ifndef ENCINA_STUB_CALLING
#define ENCINA_STUB_CALLING ENCINA_RPC_CALLING
#endif

#define neworder_v1_0_c_ifspec
          _neworder_v1_0_c_ifspec
#define neworder_v1_0_s_ifspec
          _neworder_v1_0_s_ifspec

typedef struct neworder_v1_0_epv {
void (ENCINA_STUB_CALLING *impTPCCNewOrder) (
#ifdef IDL_PROTOTYPES

                    idl_long_int length,
                    idl_char *dataP,
                    data_header *headerP,
                    trpc_status_t *trpcStatus
#endif
);

void (ENCINA_STUB_CALLING *impTPCCNOInfo) (
#ifdef IDL_PROTOTYPES

                    dbInfo_data_t *dataP,
                    trpc_status_t *trpcStatus
#endif
);

} neworder_v1_0_epv_t;

DLLEXPORT void ENCINA_STUB_CALLING impTPCCNewOrder (
#ifdef IDL_PROTOTYPES

                    idl_long_int length,
                    idl_char *dataP,
                    data_header *headerP,
                    trpc_status_t *trpcStatus
#endif
);

DLLEXPORT void ENCINA_STUB_CALLING impTPCCNOInfo (
#ifdef IDL_PROTOTYPES

                    dbInfo_data_t *dataP,
                    trpc_status_t *trpcStatus
#endif
);

trpc_handle_t        ENCINA_CALLING
mon_handle_t_tranBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

void       ENCINA_CALLING mon_handle_t_tranUnBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_handle_t       trpcHandle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

trpc_handle_t        ENCINA_CALLING
mon_handle_t_tranBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

void       ENCINA_CALLING mon_handle_t_tranUnBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_handle_t       trpcHandle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

extern neworder_v1_0_epv_t
          neworder_v1_0_client_epv;
extern _neworder_v1_0_epv_t
          neworder_v1_0_manager_epv;
extern rpc_mgr_epv_t
          neworder_v1_0_mgr_epv;

#include <encina/c_epilogue.h>
#endif /* TRANSARC_neworder_h */
```

orderstatus.h

```
#ifndef TRANSARC_orderstatus_h
#define TRANSARC_orderstatus_h

#include <trpc/trpc.h>
#include "_orderstatus.h"

#include <encina/c_prologue.h>

#if defined(BUILDDLL)
#define DLLEXPORT __declspec( dllexport )
#else
#define DLLEXPORT extern
#endif

#ifndef ENCINA_STUB_CALLING
#define ENCINA_STUB_CALLING ENCINA_RPC_CALLING
#endif

#define orderstatus_v1_0_c_ifspec
          _orderstatus_v1_0_c_ifspec
#define orderstatus_v1_0_s_ifspec
          _orderstatus_v1_0_s_ifspec

typedef struct orderstatus_v1_0_epv {
void (ENCINA_STUB_CALLING *impTPCCOrderStatus) (
#ifdef IDL_PROTOTYPES

                    idl_long_int length,
                    idl_char *dataP,
                    data_header *headerP,
                    trpc_status_t *trpcStatus
#endif
);

} orderstatus_v1_0_epv_t;

DLLEXPORT void ENCINA_STUB_CALLING impTPCCOrderStatus
(
#ifdef IDL_PROTOTYPES

                    idl_long_int length,
                    idl_char *dataP,
                    data_header *headerP,
                    trpc_status_t *trpcStatus
#endif
);

trpc_handle_t        ENCINA_CALLING
mon_handle_t_tranBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

void       ENCINA_CALLING mon_handle_t_tranUnBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_handle_t       trpcHandle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

trpc_handle_t        ENCINA_CALLING
mon_handle_t_tranBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

void       ENCINA_CALLING mon_handle_t_tranUnBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_handle_t       trpcHandle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

extern orderstatus_v1_0_epv_t
          orderstatus_v1_0_client_epv;
extern _orderstatus_v1_0_epv_t
          orderstatus_v1_0_manager_epv;
extern rpc_mgr_epv_t
          orderstatus_v1_0_mgr_epv;

#include <encina/c_epilogue.h>
#endif /* TRANSARC_orderstatus_h */
```

payment.h

```
#ifndef TRANSARC_payment_h
#define TRANSARC_payment_h

#include <trpc/trpc.h>
#include "_payment.h"

#include <encina/c_prologue.h>

#if defined(BUILDDLL)
#define DLLEXPORT __declspec( dllexport )
#else
#define DLLEXPORT extern
#endif

#ifndef ENCINA_STUB_CALLING
#define ENCINA_STUB_CALLING ENCINA_RPC_CALLING
#endif

#define payment_v1_0_c_ifspec _payment_v1_0_c_ifspec
#define payment_v1_0_s_ifspec _payment_v1_0_s_ifspec

typedef struct payment_v1_0_epv {
void (ENCINA_STUB_CALLING *impTPCCPayment) (
#ifdef IDL_PROTOTYPES

                    idl_long_int length,
                    idl_char *dataP,
                    data_header *headerP,
                    trpc_status_t *trpcStatus
#endif
);

} payment_v1_0_epv_t;

DLLEXPORT void ENCINA_STUB_CALLING impTPCCPayment (
#ifdef IDL_PROTOTYPES

                    idl_long_int length,
                    idl_char *dataP,
                    data_header *headerP,
                    trpc_status_t *trpcStatus
#endif
);
```

```
trpc_handle_t        ENCINA_CALLING
mon_handle_t_tranBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

void       ENCINA_CALLING mon_handle_t_tranUnBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_handle_t       trpcHandle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

trpc_handle_t        ENCINA_CALLING
mon_handle_t_tranBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

void       ENCINA_CALLING mon_handle_t_tranUnBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_handle_t       trpcHandle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

extern payment_v1_0_epv_t
          payment_v1_0_client_epv;
extern _payment_v1_0_epv_t
          payment_v1_0_manager_epv;
extern rpc_mgr_epv_t
          payment_v1_0_mgr_epv;

#include <encina/c_epilogue.h>
#endif /* TRANSARC_payment_h */
```

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;
}
```

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
);
```

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
```

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 );
}
```

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
```

stocklevel.h

```
#ifndef TRANSARC_stocklevel_h
#define TRANSARC_stocklevel_h

#include <trpc/trpc.h>
#include "_stocklevel.h"

#include <encina/c_prologue.h>

#if defined(BUILDDLL)
#define DLLEXPORT __declspec( dllexport )
#else
#define DLLEXPORT extern
#endif
```

```
#ifndef ENCINA_STUB_CALLING
#define ENCINA_STUB_CALLING ENCINA_RPC_CALLING
#endif

#define stocklevel_v1_0_c_ifspec
          _stocklevel_v1_0_c_ifspec
#define stocklevel_v1_0_s_ifspec
          _stocklevel_v1_0_s_ifspec

typedef struct stocklevel_v1_0_epv {
void (ENCINA_STUB_CALLING *impTPCCStockLevel) (
#ifdef IDL_PROTOTYPES

                    idl_long_int length,
                    idl_char *dataP,
                    data_header *headerP,
                    trpc_status_t *trpcStatus
#endif
);

} stocklevel_v1_0_epv_t;

DLLEXPORT void ENCINA_STUB_CALLING impTPCCStockLevel
(
#ifdef IDL_PROTOTYPES

                    idl_long_int length,
                    idl_char *dataP,
                    data_header *headerP,
                    trpc_status_t *trpcStatus
#endif
);

trpc_handle_t        ENCINA_CALLING
mon_handle_t_tranBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

void       ENCINA_CALLING mon_handle_t_tranUnBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_handle_t       trpcHandle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

trpc_handle_t        ENCINA_CALLING
mon_handle_t_tranBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

void       ENCINA_CALLING mon_handle_t_tranUnBind(
#ifdef IDL_PROTOTYPES
          mon_handle_t        handle,
          trpc_handle_t       trpcHandle,
          trpc_tranInfo_t     *tranInfoP,
          trpc_ifSpec_t *ifSpecP
#endif
          );

extern stocklevel_v1_0_epv_t
          stocklevel_v1_0_client_epv;
extern _stocklevel_v1_0_epv_t
          stocklevel_v1_0_manager_epv;
extern rpc_mgr_epv_t
          stocklevel_v1_0_mgr_epv;

#include <encina/c_epilogue.h>
#endif /* TRANSARC_stocklevel_h */
```

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_encina_dll.dsp

```
# Microsoft Developer Studio Project File -
Name="tm_encina_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_encina_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_encina_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_encina_dll.mak"
CFG="tm_encina_dll - Win32 Debug"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "tm_encina_dll - Win32 Release" (based on
"Win32 (x86) Dynamic-Link Library")
!MESSAGE "tm_encina_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_encina_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_encina.dll"

!ELSEIF  "$(CFG)" == "tm_encina_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_encina.dll"
/pdbtype:sept

!ENDIF

# Begin Target

# Name "tm_encina_dll - Win32 Release"
# Name "tm_encina_dll - Win32 Debug"
# Begin Group "Source"

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

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

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

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

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

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

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

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

tm_tuxedo_dll.dsp

```
# Microsoft Developer Studio Project File -
Name="tm_tuxedo_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_tuxedo_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 "tm_tuxedo_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_tuxedo_dll.mak"
CFG="tm_tuxedo_dll - Win32 IceCAP"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "tm_tuxedo_dll - Win32 Release" (based on
"Win32 (x86) Dynamic-Link Library")
!MESSAGE "tm_tuxedo_dll - Win32 Debug" (based on
"Win32 (x86) Dynamic-Link Library")
!MESSAGE "tm_tuxedo_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)" == "tm_tuxedo_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 libtux.lib libbuft.lib libtux2.lib
libfml.lib libfml32.lib libgp.lib /nologo
/subsystem:windows /dll /machine:I386
/out:".\bin/tpcc_tuxedo.dll"

!ELSEIF  "$(CFG)" == "tm_tuxedo_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 libtux.lib libbuft.lib libtux2.lib
libfml.lib libfml32.lib libgp.lib /nologo
/subsystem:windows /dll /debug /machine:I386
/out:".\bin/tpcc_tuxedo.dll" /pdbtype:sept

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

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "tm_tuxed"
# PROP BASE Intermediate_Dir "tm_tuxed"
# 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 /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 kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib
ole32.lib oleaut32.lib uuid.lib odbc32.lib
odbccp32.lib libtux.lib libbuft.lib libtux2.lib
libfml.lib libfml32.lib libgp.lib /nologo
/subsystem:windows /dll /debug /machine:I386
/out:".\bin/tpcc_tuxedo.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 libtux.lib libbuft.lib
libtux2.lib libfml.lib libfml32.lib libgp.lib /nologo
/subsystem:windows /dll /debug /machine:I386
/out:".\bin/tpcc_tuxedo.dll" /pdbtype:sept

!ENDIF

# Begin Target

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

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

SOURCE=.\src\tpcc_tux.cpp
# End Source File
# End Group
# Begin Group "Header"
# PROP Default_Filter "*.h"
# Begin Source File

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

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(&TermCriticalSect
ion);

                                        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(&DelBuffCriticalS
ection);

          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(&DelBuffCriticalSecti
on);
                                        }


          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
          StartCAP();
#endif

          try
          {
                    //process http query
                    ProcessQueryString(pECB, &iCmd,
&FormId, &TermId, &iSyncId);

                    if (TermId != 0)
                    {
                              if ( TermId < 0 ||
TermId >= Term.iNumEntries ||
Term.pClientData[TermId].iNextFree != -1 )
                              {
                                        //
debugging...
                                        char
szTmp[128];
                                        wsprintf(
szTmp, "Invalid term ID; TermId = %d", TermId );

          WriteMessageToEventLog( szTmp );

                                        throw new
CWEBCLNT_ERR( ERR_INVALID_TERMID );
                              }

                              //must have a valid
syncid here since termid is valid
                              if (iSyncId !=
Term.pClientData[TermId].iSyncId)
                                        throw new
CWEBCLNT_ERR( ERR_INVALID_SYNC_CONNECTION );

                              //set use time

          Term.pClientData[TermId].iTickCount =
GetTickCount();
                    }


                    switch(iCmd)
                    {
                    case 0:
                              WelcomeForm(pECB,
szBuffer);
```

```
                              break;
                    case 1:
                              switch( FormId )
                              {
                                        case
WELCOME_FORM:
                                        case
MAIN_MENU_FORM:

          break;
                                        case
NEW_ORDER_FORM:

          ProcessNewOrderForm(pECB, TermId,
szBuffer);

          break;
                                        case
PAYMENT_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(&DelBuffCriticalSectio
n);
                                        delivery =
*(pDelBuff+dwDelBuffBusyIndex);

          dwDelBuffFreeCount++;

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

          dwDelBuffBusyIndex = 0;
```

```
          LeaveCriticalSection(&DelBuffCriticalSectio
n);


          pDeliveryData->w_id = delivery.w_id;

          pDeliveryData->o_carrier_id =
delivery.o_carrier_id;


          txnDeliRec.w_id = pDeliveryData->w_id;

          txnDeliRec.o_carrier_id = pDeliveryData-
>o_carrier_id;

          txnDeliRec.TxnStartT0 =
Get64BitTime(&delivery.queue);

                                        GetLocalTime(
&trans_start );
                                        pTxn-
>Delivery();
                                        GetLocalTime(
&trans_end );

                                        //log txn

          txnDeliRec.TxnStatus = ERR_SUCCESS;
                                        for (int i=0;
i<10; i++)

          txnDeliRec.o_id[i] = pDeliveryData-
>o_id[i];

          txnDeliRec.DeltaT4 =
(int)(Get64BitTime(&trans_end) -
txnDeliRec.TxnStartT0);

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


                                        if
(txnDelilog != NULL)

          txnDelilog->WriteToLog(&txnDeliRec);
                              }
                    }
                    catch (CBaseErr *e)
                    {
                              char szTmp[1024];
                              wsprintf( szTmp, "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(&DelBuffCriticalSectio
n);
          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(&DelBuffCriticalSectio
n);

          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
```

```
 *                                      char
                    *pKey                         key
value to look for
 *                                      char
                    *pValue
          character array into which to place key's
value
 *                                      int
                              iMax
          maximum length of key value array.
 *                                      WEBERROR
          err
          error value to throw
 *
 * RETURNS:                   nothing.
 *
 * ERROR:           if (the pKey value is not found)
then
 *                                                  if
(err == 0)
 *
          return (empty string)
 *
          else
 *
          throw CWEBCLNT_ERR(err)
 *
 * COMMENTS:        http keys are formatted either
KEY=value& or KEY=value\0. This DLL formats
 *                                      TPC-C input
fields in such a manner that the keys can be
extracted in the
 *                                      above manner.
 */

void GetKeyValue(char **pQueryString, char *pKey,
char *pValue, int iMax, WEBERROR err)
{
          char *ptr;

          if ( !(ptr=strstr(*pQueryString, pKey)) )
                    goto ErrorExit;
          ptr += strlen(pKey);
          if ( *ptr != '=' )
                    goto ErrorExit;
          ptr++;

          iMax--;  // one position is for terminating
null
          while( *ptr && *ptr != '&' && iMax)
          {
                    *pValue++ = *ptr++;
                    iMax--;
          }
          *pValue = 0;  // terminating null

          *pQueryString = ptr;
          return;

ErrorExit:
          if (err != NO_ERR)
                    throw new CWEBCLNT_ERR( err );
          *pValue = 0;  // return empty result string
```

```
}

/* FUNCTION: GetIntKeyValue
 *
 * PURPOSE:         This function parses a http
formatted string for a specific key value.
 *
 * ARGUMENTS:       char
          *pQueryString       http string from client
browser
 *                                    char
                    *pKey                         key
value to look for
 *                                    WEBERROR
          NoKeyErr            error value to throw if
key not found
 *                                    WEBERROR
          NotIntErr           error value to throw if
value not numeric
 *
 * RETURNS:                    integer
 *
 * ERROR:           if (the pKey value is not found)
then
 *                                              if
(NoKeyErr != NO_ERR)
 *
          throw CWEBCLNT_ERR(err)
 *
          else
 *
          return 0
 *                                    else if (non-
numeric char found) then
 *                                              if
(NotIntErr != NO_ERR) then
 *
          throw CWEBCLNT_ERR(err)
 *
          else
 *
          return 0
 *
 * COMMENTS:        http keys are formatted either
KEY=value& or KEY=value\0. This DLL formats
 *                                    TPC-C input
fields in such a manner that the keys can be
extracted in the
 *                                    above manner.
 */

int GetIntKeyValue(char **pQueryString, char *pKey,
WEBERROR NoKeyErr, WEBERROR NotIntErr)
{
          char *ptr0;
          char *ptr;

          if ( !(ptr=strstr(*pQueryString, pKey)) )
                    goto ErrorNoKey;
          ptr += strlen(pKey);
          if ( *ptr != '=' )
                    goto ErrorNoKey;
          ptr++;
```

```
          ptr0 = ptr;                   // remember
starting point
          // scan string until a terminator (null or
&) or a non-digit
          while( *ptr && *ptr != '&' && isdigit(*ptr)
)
                    ptr++;

          // make sure we stopped scanning for the
right reason
          if ((ptr0 == ptr) || (*ptr && *ptr != '&'))
          {
                    if (NotIntErr != NO_ERR)
                              throw new CWEBCLNT_ERR(
NoKeyErr );
                    return 0;
          }

          *pQueryString = ptr;
          return atoi(ptr0);

ErrorNoKey:
          if (NoKeyErr != NO_ERR)
                    throw new CWEBCLNT_ERR( NoKeyErr
);
          return 0;
}

/* FUNCTION: TermInit
 *
 * PURPOSE:         This function initializes the
client terminal structure; it is called when the
TPCC.DLL
 *                            is first loaded by the
inet service.
 *
 */

void TermInit(void)
{
          EnterCriticalSection(&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> <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=\"SP00*\" SIZE=4>  <INPUT NAME=\"IID00*\"
SIZE=6>                              <INPUT
NAME=\"Qty00*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP01*\" SIZE=4>  <INPUT NAME=\"IID01*\"
SIZE=6>                              <INPUT
NAME=\"Qty01*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP02*\" SIZE=4>  <INPUT NAME=\"IID02*\"
SIZE=6>                              <INPUT
NAME=\"Qty02*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP03*\" SIZE=4>  <INPUT NAME=\"IID03*\"
SIZE=6>                              <INPUT
NAME=\"Qty03*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP04*\" SIZE=4>  <INPUT NAME=\"IID04*\"
SIZE=6>                              <INPUT
NAME=\"Qty04*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP05*\" SIZE=4>  <INPUT NAME=\"IID05*\"
SIZE=6>                              <INPUT
NAME=\"Qty05*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP06*\" SIZE=4>  <INPUT NAME=\"IID06*\"
SIZE=6>                              <INPUT
NAME=\"Qty06*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP07*\" SIZE=4>  <INPUT NAME=\"IID07*\"
SIZE=6>                              <INPUT
NAME=\"Qty07*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP08*\" SIZE=4>  <INPUT NAME=\"IID08*\"
SIZE=6>                              <INPUT
NAME=\"Qty08*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP09*\" SIZE=4>  <INPUT NAME=\"IID09*\"
SIZE=6>                              <INPUT
NAME=\"Qty09*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP10*\" SIZE=4>  <INPUT NAME=\"IID10*\"
SIZE=6>                              <INPUT
NAME=\"Qty10*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP11*\" SIZE=4>  <INPUT NAME=\"IID11*\"
SIZE=6>                              <INPUT
NAME=\"Qty11*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP12*\" SIZE=4>  <INPUT NAME=\"IID12*\"
```

```
SIZE=6>                            <INPUT
NAME=\"Qty12*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP13*\" SIZE=4>  <INPUT NAME=\"IID13*\"
SIZE=6>                            <INPUT
NAME=\"Qty13*\" SIZE=1><BR>"
                              "  <INPUT
NAME=\"SP14*\" SIZE=4>  <INPUT NAME=\"IID14*\"
SIZE=6>                            <INPUT
NAME=\"Qty14*\" SIZE=1><BR>"
                              "Execution Status:
Total:<BR>"
                              "</font></PRE><HR>"
                              "<INPUT TYPE=\"submit\"
NAME=\"CMD\" VALUE=\"Process\">"
                              "<INPUT TYPE=\"submit\"
NAME=\"CMD\" VALUE=\"Menu\">"
                              "</FORM></HTML>"
                              );
          }
          else
          {
                    c += wsprintf(szForm+c,
"Warehouse: %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> <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;
}
```

tpcc.def

```
LIBRARY TPCC.DLL

EXPORTS

          GetExtensionVersion @1
          HttpExtensionProc   @2
          TerminateExtension  @3
```

tpcc.h

```
/*        FILE:               TPCC.H
 *                                        Microsoft
TPC-C Kit Ver. 4.20.000
 *                                        Copyright
Microsoft, 1999
 *               All Rights Reserved
 *
 *                                        Version
4.10.000 audited by Richard Gimarc, Performance
Metrics, 3/17/99
 *
 *        PURPOSE:  Header file for ISAPI TPCC.DLL,
defines structures and functions used in the isapi
tpcc.dll.
 *
 */

//VERSION RESOURCE DEFINES
#define _APS_NEXT_RESOURCE_VALUE
                    101
#define _APS_NEXT_COMMAND_VALUE
                              40001
#define _APS_NEXT_CONTROL_VALUE
                              1000
#define _APS_NEXT_SYMED_VALUE
                    101

#define TP_MAX_RETRIES
                                        50


//note that the welcome form must be processed first
as terminal ids assigned here, once the
//terminal id is assigned then the forms can be
processed in any order.
#define WELCOME_FORM
                              1
          //beginning form no term id assigned, form
id
#define MAIN_MENU_FORM
                              2
          //term id assigned main menu form id
#define NEW_ORDER_FORM
                              3
          //new order form id
#define PAYMENT_FORM
                              4
          //payment form id
#define DELIVERY_FORM
                              5
          //delivery form id
#define ORDER_STATUS_FORM
                    6                   //order
status id
#define STOCK_LEVEL_FORM
                    7                   //stock level
form id

//This macro is used to prevent the compiler error
unused formal parameter
#define UNUSEDPARAM(x) (x = x)
//This structure defines the data necessary to keep
distinct for each terminal or client connection.
typedef struct _CLIENTDATA
{
          int                           iNextFree;
                                        //index of
next free element or -1 if this entry in use.
          int                           w_id;
                                        //warehouse
id assigned at welcome form
          int                           d_id;
                                        //district id
assigned at welcome form

          int                           iSyncId;
                              //syncronization id
          int                           iTickCount;
                                        //time of
last access;

          CTPCC_BASE          *pTxn;

} CLIENTDATA, *PCLIENTDATA;


//This structure is used to define the operational
interface for terminal id support
typedef struct _TERM
{
          int                           iNumEntries;

          //total allocated terminal array entries
          int                           iFreeList;

          //next available terminal array element or
-1 if none
          int
          iMasterSyncId;
                    //syncronization id
          CLIENTDATA          *pClientData;
                                        //pointer to
allocated client data
} TERM;

typedef TERM *PTERM;
                                        //pointer to
terminal structure type


          enum WEBERROR
          {
                    NO_ERR,
                    ERR_COMMAND_UNDEFINED,
                    ERR_D_ID_INVALID,
                    ERR_DELIVERY_CARRIER_ID_RANGE,
                    ERR_DELIVERY_CARRIER_INVALID,
                    ERR_DELIVERY_MISSING_OCD_KEY,
                    ERR_DELIVERY_THREAD_FAILED,
                    ERR_GETPROCADDR_FAILED,
                    ERR_HTML_ILL_FORMED,
                    ERR_INVALID_SYNC_CONNECTION,
                    ERR_INVALID_TERMID,
                    ERR_LOADDLL_FAILED,
                    ERR_MAX_CONNECTIONS_EXCEEDED,
                    ERR_MEM_ALLOC_FAILED,
                    ERR_MISSING_REGISTRY_ENTRIES,
                    ERR_NEWORDER_CUSTOMER_INVALID,
                    ERR_NEWORDER_CUSTOMER_KEY,
                    ERR_NEWORDER_DISTRICT_INVALID,
                    ERR_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);
```

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
```

Tpcc.ubb

```
*RESOURCES
IPCKEY 133133

MAXACCESSERS 500
MAXSERVERS 100
MAXSERVICES 100
MODEL SHM
MASTER Master
LDBAL Y
SCANUNIT 15
BLOCKTIME 60
BBLQUERY 60

*MACHINES
DEFAULT:

IIS_NODE LMID= Master
          TUXDIR="C:\tuxedo"
          APPDIR="C:\InetPub\wwwroot"
          TUXCONFIG="C:\InetPub\wwwroot\tuxconfig"
          ULOGPFX="C:\InetPub\wwwroot\ULOG"
          TYPE="WinNT"
          UID= 0
          GID= 0

*GROUPS
GROUPNO
          LMID=Master GRPNO=1 OPENINFO=NONE

GROUPPAY
          LMID=Master GRPNO=2 OPENINFO=NONE

GROUPOS
```

```
          LMID=Master GRPNO=3 OPENINFO=NONE

GROUPSL
          LMID=Master GRPNO=4 OPENINFO=NONE

GROUPDEL
          LMID=Master GRPNO=5 OPENINFO=NONE

*SERVERS
DEFAULT:

tuxapp  SRVGRP=GROUPNO
          SRVID=100
          MIN=2 MAX=10
          CLOPT="-s NEWORDER -- -Sdbserver"
          RQADDR=newq REPLYQ=Y

tuxapp  SRVGRP=GROUPPAY
          SRVID=200
          MIN=2 MAX=10
          CLOPT="-s PAYMENT -- -Sdbserver"
          RQADDR=payq REPLYQ=Y

tuxapp  SRVGRP=GROUPOS
          SRVID=300
          MIN=1 MAX=2
          CLOPT="-s ORDERSTATUS -- -Sdbserver"
          RQADDR=ordq REPLYQ=Y

tuxapp  SRVGRP=GROUPSL
          SRVID=400
          MIN=2 MAX=5
          CLOPT="-s STOCKLEVEL -- -Sdbserver"
          RQADDR=stkq REPLYQ=Y

tuxapp  SRVGRP=GROUPDEL
          SRVID=500
          MIN=1 MAX=5
          CLOPT="-s DELIVERY -- -Sdbserver"
          RQADDR=delq REPLYQ=N


*SERVICES
```

tpcc_com.cpp

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

// needed for CoinitializeEx
#define _WIN32_WINNT 0x0400

#include <windows.h>

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

#include "..\..\common\src\trans.h"
          //tpckit transaction header contains
definations of structures specific to TPC-C
#include "..\..\common\src\error.h"
#include "..\..\common\src\txn_base.h"
#include "tpcc_com.h"

#include "..\..\tpcc_com_ps\src\tpcc_com_ps_i.c"
#include "..\..\tpcc_com_all\src\tpcc_com_all_i.c"

// wrapper routine for class constructor
__declspec(dllexport) CTPCC_COM* CTPCC_COM_new(BOOL
bSinglePool)
{
          return new CTPCC_COM(bSinglePool);
}

CTPCC_COM::CTPCC_COM(BOOL bSinglePool)
{
          HRESULT hr = NULL;
          long lRet = 0;
          ULONG ulTmpSize = 0;

          m_pTxn                        = NULL;
          m_pNewOrder                   = NULL;
          m_pPayment                    = NULL;
          m_pStockLevel       = NULL;
          m_pOrderStatus      = NULL;

          m_bSinglePool       = bSinglePool;

          ulTmpSize = (ULONG) sizeof(COM_DATA);
          VariantInit(&m_vTxn);
          m_vTxn.vt = VT_SAFEARRAY;

          m_vTxn.parray =
SafeArrayCreateVector(VT_UI1, ulTmpSize, ulTmpSize);
          if (!m_vTxn.parray)
                    throw new CCOMERR( E_FAIL );

          memset((void*)m_vTxn.parray-
>pvData,0,ulTmpSize);
          m_pTxn = (COM_DATA*)m_vTxn.parray->pvData;

          hr = CoInitializeEx(NULL,
COINIT_MULTITHREADED);
          if (FAILED(hr))
          {
                    throw new CCOMERR( hr );
          }

          // create components
          if (m_bSinglePool)
          {
                    hr = CoCreateInstance(CLSID_TPCC,
NULL, CLSCTX_SERVER, IID_ITPCC, (void
**)&m_pNewOrder);
                    if (FAILED(hr))
                              throw new CCOMERR(hr);

                    // all txns will use same
component
                    m_pPayment = m_pNewOrder;
                    m_pStockLevel = m_pNewOrder;
                    m_pOrderStatus = m_pNewOrder;
          }
          else
          {
                    // use different components for
each txn

                    hr =
CoCreateInstance(CLSID_NewOrder, NULL, CLSCTX_SERVER,
IID_ITPCC, (void **)&m_pNewOrder);
                    if (FAILED(hr))
                              throw new CCOMERR(hr);

                    hr =
CoCreateInstance(CLSID_Payment, NULL, CLSCTX_SERVER,
IID_ITPCC, (void **)&m_pPayment);
                    if (FAILED(hr))
                              throw new CCOMERR(hr);

                    hr =
CoCreateInstance(CLSID_StockLevel, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pStockLevel);
                    if (FAILED(hr))
                              throw new CCOMERR(hr);

                    hr =
CoCreateInstance(CLSID_OrderStatus, NULL,
CLSCTX_SERVER, IID_ITPCC, (void **)&m_pOrderStatus);
                    if (FAILED(hr))
                              throw new CCOMERR(hr);
          }

          // call setcomplete to release each
component back into pool
          hr = m_pNewOrder->CallSetComplete();
          if (FAILED(hr))
                    throw new CCOMERR(hr);

          if (!m_bSinglePool)
          {
                    hr = m_pPayment-
>CallSetComplete();
                    if (FAILED(hr))
                              throw new CCOMERR(hr);

                    hr = m_pStockLevel-
>CallSetComplete();
                    if (FAILED(hr))
                              throw new CCOMERR(hr);
                    hr = m_pOrderStatus-
>CallSetComplete();
                    if (FAILED(hr))
                              throw new CCOMERR(hr);
          }
}

CTPCC_COM::~CTPCC_COM()
{
          if (m_pTxn)
                    SafeArrayDestroy(m_vTxn.parray);

          ReleaseInterface(m_pNewOrder);
          if (!m_bSinglePool)
          {
                    ReleaseInterface(m_pPayment);
                    ReleaseInterface(m_pStockLevel);
                    ReleaseInterface(m_pOrderStatus);
          }
          CoUninitialize();
}

void CTPCC_COM::NewOrder()
{
          VARIANT   vTxn_out;

          HRESULT hr = m_pNewOrder->NewOrder(m_vTxn,
&vTxn_out);
          if (FAILED(hr))
                    throw new CCOMERR( hr );
          memcpy(m_pTxn, (void *)vTxn_out.parray-
>pvData,vTxn_out.parray->rgsabound[0].cElements);
          SafeArrayDestroy(vTxn_out.parray);

          if ( m_pTxn->ErrorType != ERR_SUCCESS )
                    throw new CCOMERR( m_pTxn-
>ErrorType, m_pTxn->error );
}

void CTPCC_COM::Payment()
{
          VARIANT   vTxn_out;

          HRESULT hr = m_pPayment->Payment(m_vTxn,
&vTxn_out);
          if (FAILED(hr))
                    throw new CCOMERR( hr );
          memcpy(m_pTxn, (void *)vTxn_out.parray-
>pvData,vTxn_out.parray->rgsabound[0].cElements);
          SafeArrayDestroy(vTxn_out.parray);

          if ( m_pTxn->ErrorType != ERR_SUCCESS )
                    throw new CCOMERR( m_pTxn-
>ErrorType, m_pTxn->error );
}

void CTPCC_COM::StockLevel()
{
          VARIANT   vTxn_out;

          HRESULT hr = m_pStockLevel-
>StockLevel(m_vTxn, &vTxn_out);
          if (FAILED(hr))
                    throw new CCOMERR( hr );
          memcpy(m_pTxn, (void *)vTxn_out.parray-
>pvData,vTxn_out.parray->rgsabound[0].cElements);
          SafeArrayDestroy(vTxn_out.parray);

          if ( m_pTxn->ErrorType != ERR_SUCCESS )
                    throw new CCOMERR( m_pTxn-
>ErrorType, m_pTxn->error );
}

void CTPCC_COM::OrderStatus()
{
          VARIANT   vTxn_out;

          HRESULT hr = m_pOrderStatus-
>OrderStatus(m_vTxn, &vTxn_out);
          if (FAILED(hr))
                    throw new CCOMERR( hr );
          memcpy(m_pTxn, (void *)vTxn_out.parray-
>pvData,vTxn_out.parray->rgsabound[0].cElements);
          SafeArrayDestroy(vTxn_out.parray);

          if ( m_pTxn->ErrorType != ERR_SUCCESS )
                    throw new CCOMERR( m_pTxn-
>ErrorType, m_pTxn->error );
}
```

tpcc_com.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.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.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.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.h

```
#pragma warning( disable: 4049 )  /* more than 64k
source lines */

/* this ALWAYS GENERATED file contains the
definitions for the interfaces */


 /* File created by MIDL compiler version 5.03.0280
*/
/* at Thu Dec 13 23:13:14 2001
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win32 (32b run),
ms_ext, c_ext
    error checks: allocation ref bounds_check enum
stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany),
__declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )


/* verify that the <rpcndr.h> version is high enough
to compile this file*/
#ifndef __REQUIRED_RPCNDR_H_VERSION__
#define __REQUIRED_RPCNDR_H_VERSION__ 440
#endif

#include "rpc.h"
#include "rpcndr.h"

#ifndef __tpcc_com_all_h__
#define __tpcc_com_all_h__

/* Forward Declarations */

#ifndef __TPCC_FWD_DEFINED__
#define __TPCC_FWD_DEFINED__

#ifdef __cplusplus
typedef class TPCC TPCC;
#else
typedef struct TPCC TPCC;
#endif /* __cplusplus */

#endif    /* __TPCC_FWD_DEFINED__ */


#ifndef __NewOrder_FWD_DEFINED__
#define __NewOrder_FWD_DEFINED__

#ifdef __cplusplus
typedef class NewOrder NewOrder;
#else
typedef struct NewOrder NewOrder;
#endif /* __cplusplus */

#endif    /* __NewOrder_FWD_DEFINED__ */


#ifndef __OrderStatus_FWD_DEFINED__
#define __OrderStatus_FWD_DEFINED__

#ifdef __cplusplus
typedef class OrderStatus OrderStatus;
#else
typedef struct OrderStatus OrderStatus;
#endif /* __cplusplus */

#endif    /* __OrderStatus_FWD_DEFINED__ */


#ifndef __Payment_FWD_DEFINED__
#define __Payment_FWD_DEFINED__

#ifdef __cplusplus
typedef class Payment Payment;
#else
typedef struct Payment Payment;
#endif /* __cplusplus */

#endif    /* __Payment_FWD_DEFINED__ */


#ifndef __StockLevel_FWD_DEFINED__
#define __StockLevel_FWD_DEFINED__

#ifdef __cplusplus
typedef class StockLevel StockLevel;
#else
typedef struct StockLevel StockLevel;
#endif /* __cplusplus */

#endif    /* __StockLevel_FWD_DEFINED__ */


/* header files for imported files */
#include "oaidl.h"
#include "ocidl.h"
#include "tpcc_com_ps.h"

#ifdef __cplusplus
extern "C"{
#endif

void __RPC_FAR * __RPC_USER
MIDL_user_allocate(size_t);
void __RPC_USER MIDL_user_free( void __RPC_FAR * );

/* interface __MIDL_itf_tpcc_com_all_0000 */
/* [local] */








extern RPC_IF_HANDLE
__MIDL_itf_tpcc_com_all_0000_v0_0_c_ifspec;
extern RPC_IF_HANDLE
__MIDL_itf_tpcc_com_all_0000_v0_0_s_ifspec;


#ifndef __TPCCLib_LIBRARY_DEFINED__
#define __TPCCLib_LIBRARY_DEFINED__

/* library TPCCLib */
/* [helpstring][version][uuid] */


EXTERN_C const IID LIBID_TPCCLib;
EXTERN_C const CLSID CLSID_TPCC;

#ifdef __cplusplus

class DECLSPEC_UUID("122A3128-2520-11D3-BA71-
00C04FBFE08B")
TPCC;
#endif

EXTERN_C const CLSID CLSID_NewOrder;

#ifdef __cplusplus

class DECLSPEC_UUID("975BAABF-84A7-11D2-BA47-
00C04FBFE08B")
NewOrder;
#endif

EXTERN_C const CLSID CLSID_OrderStatus;

#ifdef __cplusplus

class DECLSPEC_UUID("266836AD-A50D-11D2-BA4E-
00C04FBFE08B")
OrderStatus;
#endif

EXTERN_C const CLSID CLSID_Payment;

#ifdef __cplusplus

class DECLSPEC_UUID("CD02F7EF-A4FA-11D2-BA4E-
00C04FBFE08B")
Payment;
#endif

EXTERN_C const CLSID CLSID_StockLevel;

#ifdef __cplusplus

class DECLSPEC_UUID("2668369E-A50D-11D2-BA4E-
00C04FBFE08B")
StockLevel;
#endif
#endif /* __TPCCLib_LIBRARY_DEFINED__ */

/* Additional Prototypes for ALL interfaces */

/* end of Additional Prototypes */

#ifdef __cplusplus
}
#endif

#endif
```

tpcc_com_all.idl

```
/*        FILE:              TPCC.IDL
 *                                          Microsoft
TPC-C Kit Ver. 4.20.000
 *                                          Copyright
Microsoft, 1999
 *              All Rights Reserved
 *
 *                                          not yet
audited
 *
 *        PURPOSE:  IDL source for TPCC.dll.  This
file is processed by the MIDL tool to
 *                                          produce the
type library (TPCC.tlb) and marshalling code.
 *
 *  Change history:
 *                  4.20.000 - first version
 */

interface TPCC;
interface NewOrder;
interface OrderStatus;
interface Payment;
interface StockLevel;


import "oaidl.idl";
import "ocidl.idl";
import "..\tpcc_com_ps\src\tpcc_com_ps.idl";

[
          uuid(122A3117-2520-11D3-BA71-00C04FBFE08B),
          version(1.0),
          helpstring("TPC-C 1.0 Type Library")
]
library TPCCLib
{
          importlib("stdole32.tlb");
          importlib("stdole2.tlb");

          [
                    uuid(122A3128-2520-11D3-BA71-
00C04FBFE08B),
                    helpstring("All Txns Class")
          ]
          coclass TPCC
          {
                    [default] interface ITPCC;
          };


          [
                    uuid(975BAABF-84A7-11D2-BA47-
00C04FBFE08B),
                    helpstring("NewOrder Class")
          ]
          coclass NewOrder
          {
                    [default] interface ITPCC;
          };


          [
                    uuid(266836AD-A50D-11D2-BA4E-
00C04FBFE08B),
                    helpstring("OrderStatus Class")
          ]
          coclass OrderStatus
          {
                    [default] interface ITPCC;
          };


          [
                    uuid(CD02F7EF-A4FA-11D2-BA4E-
00C04FBFE08B),
                    helpstring("Payment Class")
          ]
          coclass Payment
          {
                    [default] interface ITPCC;
          };


          [
                    uuid(2668369E-A50D-11D2-BA4E-
00C04FBFE08B),
                    helpstring("StockLevel Class")
          ]
          coclass StockLevel
          {
                    [default] interface ITPCC;
          };

};
```

tpcc_com_all.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.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_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,0x71,0x00,0x
C0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_NewOrder,0x975BAABF,0x84A7,0x11D2,0xBA,0x47,0x0
0,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_OrderStatus,0x266836AD,0xA50D,0x11D2,0xBA,0x4E,
0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_Payment,0xCD02F7EF,0xA4FA,0x11D2,0xBA,0x4E,0x00
,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID,
CLSID_StockLevel,0x2668369E,0xA50D,0x11D2,0xBA,0x4E,0
x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



#endif /* !defined(_M_IA64) && !defined(_M_AXP64)*/


#pragma warning( disable: 4049 )  /* more than 64k
source lines */

/* this ALWAYS GENERATED file contains the IIDs and
CLSIDs */

/* link this file in with the server and any clients
*/


 /* File created by MIDL compiler version 5.03.0280
*/
/* at Thu Dec 13 23:13:14 2001
 */
/* Compiler settings for .\src\tpcc_com_all.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b
run,appending), ms_ext, c_ext, robust
    error checks: allocation ref 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,0x71,0x00,0x
C0,0x4F,0xBF,0xE0,0x8B);
MIDL_DEFINE_GUID(CLSID, 
CLSID_NewOrder,0x975BAABF,0x84A7,0x11D2,0xBA,0x47,0x0
0,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID, 
CLSID_OrderStatus,0x266836AD,0xA50D,0x11D2,0xBA,0x4E,
0x00,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID, 
CLSID_Payment,0xCD02F7EF,0xA4FA,0x11D2,0xBA,0x4E,0x00
,0xC0,0x4F,0xBF,0xE0,0x8B);


MIDL_DEFINE_GUID(CLSID, 
CLSID_StockLevel,0x2668369E,0xA50D,0x11D2,0xBA,0x4E,0
x00,0xC0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID

#ifdef __cplusplus
}
#endif



#endif /* defined(_M_IA64) || defined(_M_AXP64)*/
```

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_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_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_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.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"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib
winspool.lib comdlg32.lib advapi32.lib shell32.lib
ole32.lib oleaut32.lib uuid.lib odbc32.lib
odbccp32.lib /nologo /subsystem:windows /machine:I386
# ADD LINK32 kernel32.lib rpcndr.lib rpcns4.lib
rpcrt4.lib oleaut32.lib uuid.lib /nologo
/entry:"DllMain" /subsystem:windows /dll /pdb:none
/machine:I386 /def:".\src\tpcc_com_ps.def"
# Begin Custom Build - Copying tpcc_com_ps.h
InputPath=.\bin\tpcc_com_ps.dll
SOURCE="$(InputPath)"

"..\tpcc_com_all\src\tpcc_com_ps.h" : $(SOURCE)
"$(INTDIR)" "$(OUTDIR)"
          copy    .\src\tpcc_com_ps.h
..\tpcc_com_all\src\

# End Custom Build

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

# PROP BASE Use_MFC 0
# PROP BASE Use_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.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.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_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,0x47,0x00,0xC
0,0x4F,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,0x47,0x00,0xC
0,0x4F,0xBF,0xE0,0x8B);

#undef MIDL_DEFINE_GUID
```

```
#ifdef __cplusplus
}
#endif



#endif /* defined(_M_IA64) || defined(_M_AXP64)*/
```

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,{0x00,0x00,0x00,0x00,0
x00,0x00,0x00,0x00}} */


/* Object interface: IUnknown, ver. 0.0,

GUID={0x00000000,0x0000,0x0000,{0xC0,0x00,0x00,0x00,0
x00,0x00,0x00,0x46}} */


/* Object interface: ITPCC, ver. 0.0,

GUID={0xFEEE6AA2,0x84B1,0x11d2,{0xBA,0x47,0x00,0xC0,0
x4F,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( 0xffffffe0 ),     /* 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( 0xffffffd4 ),     /* 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( 0xffffffd4 ),     /* 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( 0xffffffd4 ),     /* Offset= -
44 (632) */
/* 678 */
                              0x1d,               /*
FC_SMFARRAY */
                              0x0,                /*
0 */
/* 680 */ NdrFcShort( 0x8 ),  /* 8 */
/* 682 */ 0x1,                /* FC_BYTE */
                              0x5b,               /*
FC_END */
/* 684 */
                              0x15,               /*
FC_STRUCT */
                              0x3,                /*
3 */
/* 686 */ NdrFcShort( 0x10 ), /* 16 */
/* 688 */ 0x8,                /* FC_LONG */
                              0x6,                /*
FC_SHORT */
/* 690 */ 0x6,                /* FC_SHORT */
                              0x4c,               /*
FC_EMBEDDED_COMPLEX */
/* 692 */ 0x0,                /* 0 */
                              NdrFcShort( 0xfffffff1
),        /* Offset= -15 (678) */
                              0x5b,               /*
FC_END */
/* 696 */
                              0x1a,               /*
FC_BOGUS_STRUCT */
                              0x3,                /*
3 */
/* 698 */ NdrFcShort( 0x18 ), /* 24 */
/* 700 */ NdrFcShort( 0x0 ),  /* 0 */
/* 702 */ NdrFcShort( 0xa ),  /* Offset= 10 (712) */
/* 704 */ 0x8,                /* FC_LONG */
                              0x36,               /*
FC_POINTER */
/* 706 */ 0x4c,               /* FC_EMBEDDED_COMPLEX
*/
                              0x0,                /*
0 */
/* 708 */ NdrFcShort( 0xffffffe8 ),     /* Offset= -
24 (684) */
/* 710 */ 0x5c,               /* FC_PAD */
                              0x5b,               /*
FC_END */
/* 712 */
                              0x11, 0x0,          /*
FC_RP */
/* 714 */ NdrFcShort( 0xffffff0c ),     /* Offset= -
244 (470) */
/* 716 */
```

```
                              0x1b,               /*
FC_CARRAY */
                              0x0,                /*
0 */
/* 718 */ NdrFcShort( 0x1 ),  /* 1 */
/* 720 */ 0x19,               /* Corr desc:  field
pointer, FC_ULONG */
                              0x0,                /*
*/
/* 722 */ NdrFcShort( 0x0 ),  /* 0 */
/* 724 */ 0x1,                /* FC_BYTE */
                              0x5b,               /*
FC_END */
/* 726 */
                              0x16,               /*
FC_PSTRUCT */
                              0x3,                /*
3 */
/* 728 */ NdrFcShort( 0x8 ),  /* 8 */
/* 730 */
                              0x4b,               /*
FC_PP */
                              0x5c,               /*
FC_PAD */
/* 732 */
                              0x46,               /*
FC_NO_REPEAT */
                              0x5c,               /*
FC_PAD */
/* 734 */ NdrFcShort( 0x4 ),  /* 4 */
/* 736 */ NdrFcShort( 0x4 ),  /* 4 */
/* 738 */ 0x12, 0x0,          /* FC_UP */
/* 740 */ NdrFcShort( 0xffffffe8 ),     /* Offset= -
24 (716) */
/* 742 */
                              0x5b,               /*
FC_END */

                              0x8,                /*
FC_LONG */
/* 744 */ 0x8,                /* FC_LONG */
                              0x5b,               /*
FC_END */
/* 746 */
                              0x1b,               /*
FC_CARRAY */
                              0x1,                /*
1 */
/* 748 */ NdrFcShort( 0x2 ),  /* 2 */
/* 750 */ 0x19,               /* Corr desc:  field
pointer, FC_ULONG */
                              0x0,                /*
*/
/* 752 */ NdrFcShort( 0x0 ),  /* 0 */
/* 754 */ 0x6,                /* FC_SHORT */
                              0x5b,               /*
FC_END */
/* 756 */
                              0x16,               /*
FC_PSTRUCT */
                              0x3,                /*
3 */
/* 758 */ NdrFcShort( 0x8 ),  /* 8 */
```

```
/* 760 */
                              0x4b,               /*
FC_PP */
                              0x5c,               /*
FC_PAD */
/* 762 */
                              0x46,               /*
FC_NO_REPEAT */
                              0x5c,               /*
FC_PAD */
/* 764 */ NdrFcShort( 0x4 ),  /* 4 */
/* 766 */ NdrFcShort( 0x4 ),  /* 4 */
/* 768 */ 0x12, 0x0,          /* FC_UP */
/* 770 */ NdrFcShort( 0xffffffe8 ),     /* Offset= -
24 (746) */
/* 772 */
                              0x5b,               /*
FC_END */

                              0x8,                /*
FC_LONG */
/* 774 */ 0x8,                /* FC_LONG */
                              0x5b,               /*
FC_END */
/* 776 */
                              0x1b,               /*
FC_CARRAY */
                              0x3,                /*
3 */
/* 778 */ NdrFcShort( 0x4 ),  /* 4 */
/* 780 */ 0x19,               /* Corr desc:  field
pointer, FC_ULONG */
                              0x0,                /*
*/
/* 782 */ NdrFcShort( 0x0 ),  /* 0 */
/* 784 */ 0x8,                /* FC_LONG */
                              0x5b,               /*
FC_END */
/* 786 */
                              0x16,               /*
FC_PSTRUCT */
                              0x3,                /*
3 */
/* 788 */ NdrFcShort( 0x8 ),  /* 8 */
/* 790 */
                              0x4b,               /*
FC_PP */
                              0x5c,               /*
FC_PAD */
/* 792 */
                              0x46,               /*
FC_NO_REPEAT */
                              0x5c,               /*
FC_PAD */
/* 794 */ NdrFcShort( 0x4 ),  /* 4 */
/* 796 */ NdrFcShort( 0x4 ),  /* 4 */
/* 798 */ 0x12, 0x0,          /* FC_UP */
/* 800 */ NdrFcShort( 0xffffffe8 ),     /* Offset= -
24 (776) */
/* 802 */
                              0x5b,               /*
FC_END */
```

```
                              0x8,                /*
FC_LONG */
/* 804 */ 0x8,                /* FC_LONG */
                              0x5b,               /*
FC_END */
/* 806 */
                              0x1b,               /*
FC_CARRAY */
                              0x7,                /*
7 */
/* 808 */ NdrFcShort( 0x8 ),  /* 8 */
/* 810 */ 0x19,               /* Corr desc:  field
pointer, FC_ULONG */
                              0x0,                /*
*/
/* 812 */ NdrFcShort( 0x0 ),  /* 0 */
/* 814 */ 0xb,                /* FC_HYPER */
                              0x5b,               /*
FC_END */
/* 816 */
                              0x16,               /*
FC_PSTRUCT */
                              0x3,                /*
3 */
/* 818 */ NdrFcShort( 0x8 ),  /* 8 */
/* 820 */
                              0x4b,               /*
FC_PP */
                              0x5c,               /*
FC_PAD */
/* 822 */
                              0x46,               /*
FC_NO_REPEAT */
                              0x5c,               /*
FC_PAD */
/* 824 */ NdrFcShort( 0x4 ),  /* 4 */
/* 826 */ NdrFcShort( 0x4 ),  /* 4 */
/* 828 */ 0x12, 0x0,          /* FC_UP */
/* 830 */ NdrFcShort( 0xffffffe8 ),     /* Offset= -
24 (806) */
/* 832 */
                              0x5b,               /*
FC_END */

                              0x8,                /*
FC_LONG */
/* 834 */ 0x8,                /* FC_LONG */
                              0x5b,               /*
FC_END */
/* 836 */
                              0x15,               /*
FC_STRUCT */
                              0x3,                /*
3 */
/* 838 */ NdrFcShort( 0x8 ),  /* 8 */
/* 840 */ 0x8,                /* FC_LONG */
                              0x8,                /*
FC_LONG */
/* 842 */ 0x5c,               /* FC_PAD */
                              0x5b,               /*
FC_END */
/* 844 */
```

```
                              0x1b,              /*
FC_CARRAY */
                              0x3,               /*
3 */
/* 846 */ NdrFcShort( 0x8 ),  /* 8 */
/* 848 */ 0x7,                /* Corr desc: FC_USHORT
*/
                              0x0,               /*
*/
/* 850 */ NdrFcShort( 0xffd8 ),        /* -40 */
/* 852 */ 0x4c,               /* FC_EMBEDDED_COMPLEX
*/
                              0x0,               /*
0 */
/* 854 */ NdrFcShort( 0xffffffee ),    /* Offset= -
18 (836) */
/* 856 */ 0x5c,               /* FC_PAD */
                              0x5b,              /*
FC_END */
/* 858 */
                              0x1a,              /*
FC_BOGUS_STRUCT */
                              0x3,               /*
3 */
/* 860 */ NdrFcShort( 0x28 ), /* 40 */
/* 862 */ NdrFcShort( 0xffffffee ),    /* Offset= -
18 (844) */
/* 864 */ NdrFcShort( 0x0 ),  /* Offset= 0 (864) */
/* 866 */ 0x6,                /* FC_SHORT */
                              0x6,               /*
FC_SHORT */
/* 868 */ 0x38,               /* FC_ALIGNM4 */
                              0x8,               /*
FC_LONG */
/* 870 */ 0x8,                /* FC_LONG */
                              0x4c,              /*
FC_EMBEDDED_COMPLEX */
/* 872 */ 0x0,                /* 0 */
                              NdrFcShort( 0xfffffdf7
),        /* Offset= -521 (352) */
                              0x5b,              /*
FC_END */
/* 876 */
                              0x12, 0x0,         /*
FC_UP */
/* 878 */ NdrFcShort( 0xfffffef6 ),    /* Offset= -
266 (612) */
/* 880 */
                              0x12, 0x8,         /*
FC_UP [simple_pointer] */
/* 882 */ 0x1,                /* FC_BYTE */
                              0x5c,              /*
FC_PAD */
/* 884 */
                              0x12, 0x8,         /*
FC_UP [simple_pointer] */
/* 886 */ 0x6,                /* FC_SHORT */
                              0x5c,              /*
FC_PAD */
/* 888 */
                              0x12, 0x8,         /*
FC_UP [simple_pointer] */
/* 890 */ 0x8,                /* FC_LONG */
```

```
                              0x5c,              /*
FC_PAD */
/* 892 */
                              0x12, 0x8,         /*
FC_UP [simple_pointer] */
/* 894 */ 0xa,                /* FC_FLOAT */
                              0x5c,              /*
FC_PAD */
/* 896 */
                              0x12, 0x8,         /*
FC_UP [simple_pointer] */
/* 898 */ 0xc,                /* FC_DOUBLE */
                              0x5c,              /*
FC_PAD */
/* 900 */
                              0x12, 0x0,         /*
FC_UP */
/* 902 */ NdrFcShort( 0xfffffd90 ),    /* Offset= -
624 (278) */
/* 904 */
                              0x12, 0x10,        /*
FC_UP [pointer_deref] */
/* 906 */ NdrFcShort( 0xfffffd92 ),    /* Offset= -
622 (284) */
/* 908 */
                              0x12, 0x10,        /*
FC_UP [pointer_deref] */
/* 910 */ NdrFcShort( 0xfffffda6 ),    /* Offset= -
602 (308) */
/* 912 */
                              0x12, 0x10,        /*
FC_UP [pointer_deref] */
/* 914 */ NdrFcShort( 0xfffffdb4 ),    /* Offset= -
588 (326) */
/* 916 */
                              0x12, 0x10,        /*
FC_UP [pointer_deref] */
/* 918 */ NdrFcShort( 0xfffffdc2 ),    /* Offset= -
574 (344) */
/* 920 */
                              0x12, 0x10,        /*
FC_UP [pointer_deref] */
/* 922 */ NdrFcShort( 0x2 ),  /* Offset= 2 (924) */
/* 924 */
                              0x12, 0x0,         /*
FC_UP */
/* 926 */ NdrFcShort( 0x16 ), /* Offset= 22 (948) */
/* 928 */
                              0x15,              /*
FC_STRUCT */
                              0x7,               /*
7 */
/* 930 */ NdrFcShort( 0x10 ), /* 16 */
/* 932 */ 0x6,                /* FC_SHORT */
                              0x1,               /*
FC_BYTE */
/* 934 */ 0x1,                /* FC_BYTE */
                              0x38,              /*
FC_ALIGNM4 */
/* 936 */ 0x8,                /* FC_LONG */
                              0x39,              /*
FC_ALIGNM8 */
/* 938 */ 0xb,                /* FC_HYPER */
```

```
                              0x5b,              /*
FC_END */
/* 940 */
                              0x12, 0x0,         /*
FC_UP */
/* 942 */ NdrFcShort( 0xfffffff2 ),    /* Offset= -
14 (928) */
/* 944 */
                              0x12, 0x8,         /*
FC_UP [simple_pointer] */
/* 946 */ 0x2,                /* FC_CHAR */
                              0x5c,              /*
FC_PAD */
/* 948 */
                              0x1a,              /*
FC_BOGUS_STRUCT */
                              0x7,               /*
7 */
/* 950 */ NdrFcShort( 0x20 ), /* 32 */
/* 952 */ NdrFcShort( 0x0 ),  /* 0 */
/* 954 */ NdrFcShort( 0x0 ),  /* Offset= 0 (954) */
/* 956 */ 0x8,                /* FC_LONG */
                              0x8,               /*
FC_LONG */
/* 958 */ 0x6,                /* FC_SHORT */
                              0x6,               /*
FC_SHORT */
/* 960 */ 0x6,                /* FC_SHORT */
                              0x6,               /*
FC_SHORT */
/* 962 */ 0x4c,               /* FC_EMBEDDED_COMPLEX
*/
                              0x0,               /*
0 */
/* 964 */ NdrFcShort( 0xfffffc42 ),    /* Offset= -
958 (6) */
/* 966 */ 0x5c,               /* FC_PAD */
                              0x5b,              /*
FC_END */
/* 968 */ 0xb4,               /* FC_USER_MARSHAL */
                              0x83,              /*
131 */
/* 970 */ NdrFcShort( 0x0 ),  /* 0 */
/* 972 */ NdrFcShort( 0x10 ), /* 16 */
/* 974 */ NdrFcShort( 0x0 ),  /* 0 */
/* 976 */ NdrFcShort( 0xfffffc32 ),    /* Offset= -
974 (2) */
/* 978 */
                              0x11, 0x4,         /*
FC_RP [alloced_on_stack] */
/* 980 */ NdrFcShort( 0x6 ),  /* Offset= 6 (986) */
/* 982 */
                              0x13, 0x0,         /*
FC_OP */
/* 984 */ NdrFcShort( 0xffffffdc ),    /* Offset= -
36 (948) */
/* 986 */ 0xb4,               /* FC_USER_MARSHAL */
                              0x83,              /*
131 */
/* 988 */ NdrFcShort( 0x0 ),  /* 0 */
/* 990 */ NdrFcShort( 0x10 ), /* 16 */
/* 992 */ NdrFcShort( 0x0 ),  /* 0 */
/* 994 */ NdrFcShort( 0xfffffff4 ),     /* Offset= -
12 (982) */

                              0x0
        }
    };

const CInterfaceProxyVtbl *
_tpcc_com_ps_ProxyVtblList[] =
{
    ( CInterfaceProxyVtbl *) &_ITPCCProxyVtbl,
    0
};

const CInterfaceStubVtbl *
_tpcc_com_ps_StubVtblList[] =
{
    ( CInterfaceStubVtbl *) &_ITPCCStubVtbl,
    0
};

PCInterfaceName const
_tpcc_com_ps_InterfaceNamesList[] =
{
    "ITPCC",
    0
};


#define _tpcc_com_ps_CHECK_IID(n)
          IID_GENERIC_CHECK_IID( _tpcc_com_ps, pIID,
n)

int __stdcall _tpcc_com_ps_IID_Lookup( const IID *
pIID, int * pIndex )
{

    if(!_tpcc_com_ps_CHECK_IID(0))
        {
        *pIndex = 0;
        return 1;
        }

    return 0;
}

const ExtendedProxyFileInfo tpcc_com_ps_ProxyFileInfo
=
{
    (PCInterfaceProxyVtblList *) &
_tpcc_com_ps_ProxyVtblList,
    (PCInterfaceStubVtblList *) &
_tpcc_com_ps_StubVtblList,
    (const PCInterfaceName * ) &
_tpcc_com_ps_InterfaceNamesList,
    0, // no delegation
    & _tpcc_com_ps_IID_Lookup,
    1,
    2,
    0, /* table of [async_uuid] interfaces */
    0, /* Filler1 */
    0, /* Filler2 */
    0  /* Filler3 */
```

```
};


#endif /* !defined(_M_IA64) && !defined(_M_AXP64)*/


#pragma warning( disable: 4049 )  /* more than 64k
source lines */

/* this ALWAYS GENERATED file contains the proxy stub
code */


 /* File created by MIDL compiler version 5.03.0280
*/
/* at Thu Dec 13 23:13:08 2001
 */
/* Compiler settings for .\src\tpcc_com_ps.idl:
    Oicf (OptLev=i2), W1, Zp8, env=Win64 (32b
run,appending), ms_ext, c_ext, robust
    error checks: allocation ref bounds_check enum
stub_data
    VC __declspec() decoration level:
         __declspec(uuid()), __declspec(selectany),
__declspec(novtable)
         DECLSPEC_UUID(), MIDL_INTERFACE()
*/
//@@MIDL_FILE_HEADING(  )

#if defined(_M_IA64) || defined(_M_AXP64)
#define USE_STUBLESS_PROXY


/* verify that the <rpcproxy.h> version is high
enough to compile this file*/
#ifndef __REDQ_RPCPROXY_H_VERSION__
#define __REQUIRED_RPCPROXY_H_VERSION__ 475
#endif


#include "rpcproxy.h"
#ifndef __RPCPROXY_H_VERSION__
#error this stub requires an updated version of
<rpcproxy.h>
#endif // __RPCPROXY_H_VERSION__


#include "tpcc_com_ps.h"

#define TYPE_FORMAT_STRING_SIZE   979
#define PROC_FORMAT_STRING_SIZE   253
#define TRANSMIT_AS_TABLE_SIZE    0
#define WIRE_MARSHAL_TABLE_SIZE   1

typedef struct _MIDL_TYPE_FORMAT_STRING
    {
    short          Pad;
    unsigned char  Format[ TYPE_FORMAT_STRING_SIZE ];
    } MIDL_TYPE_FORMAT_STRING;

typedef struct _MIDL_PROC_FORMAT_STRING
    {
    short          Pad;
```

```
    unsigned char  Format[ PROC_FORMAT_STRING_SIZE ];
    } MIDL_PROC_FORMAT_STRING;


extern const MIDL_TYPE_FORMAT_STRING
__MIDL_TypeFormatString;
extern const MIDL_PROC_FORMAT_STRING
__MIDL_ProcFormatString;


/* Standard interface: __MIDL_itf_tpcc_com_ps_0000,
ver. 0.0,

GUID={0x00000000,0x0000,0x0000,{0x00,0x00,0x00,0x00,0
x00,0x00,0x00,0x00}} */


/* Object interface: IUnknown, ver. 0.0,

GUID={0x00000000,0x0000,0x0000,{0xC0,0x00,0x00,0x00,0
x00,0x00,0x00,0x46}} */


/* Object interface: ITPCC, ver. 0.0,

GUID={0xFEEE6AA2,0x84B1,0x11d2,{0xBA,0x47,0x00,0xC0,0
x4F,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( 0xffffffdc ),     /* 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( 0xffffffdc ),     /* Offset= -
36 (538) */
/* 576 */
                              0x2f,               /*
FC_IP */
                              0x5a,               /*
FC_CONSTANT_IID */
```

```
/* 578 */ NdrFcLong( 0x2f ),  /* 47 */
/* 582 */ NdrFcShort( 0x0 ),  /* 0 */
/* 584 */ NdrFcShort( 0x0 ),  /* 0 */
/* 586 */ 0xc0,               /* 192 */
                              0x0,                /*
0 */
/* 588 */ 0x0,                /* 0 */
                              0x0,                /*
0 */
/* 590 */ 0x0,                /* 0 */
                              0x0,                /*
0 */
/* 592 */ 0x0,                /* 0 */
                              0x46,               /*
70 */
/* 594 */
                              0x1b,               /*
FC_CARRAY */
                              0x0,                /*
0 */
/* 596 */ NdrFcShort( 0x1 ),  /* 1 */
/* 598 */ 0x19,               /* Corr desc:  field
pointer, FC_ULONG */
                              0x0,                /*
*/
/* 600 */ NdrFcShort( 0x4 ),  /* 4 */
/* 602 */ NdrFcShort( 0x1 ),  /* Corr flags:  early,
*/
/* 604 */ 0x1,                /* FC_BYTE */
                              0x5b,               /*
FC_END */
/* 606 */
                              0x1a,               /*
FC_BOGUS_STRUCT */
                              0x3,                /*
3 */
/* 608 */ NdrFcShort( 0x18 ), /* 24 */
/* 610 */ NdrFcShort( 0x0 ),  /* 0 */
/* 612 */ NdrFcShort( 0xc ),  /* Offset= 12 (624) */
/* 614 */ 0x8,                /* FC_LONG */
                              0x8,                /*
FC_LONG */
/* 616 */ 0x4c,               /* FC_EMBEDDED_COMPLEX
*/
                              0x0,                /*
0 */
/* 618 */ NdrFcShort( 0xffffffd6 ),     /* Offset= -
42 (576) */
/* 620 */ 0x39,               /* FC_ALIGNM8 */
                              0x36,               /*
FC_POINTER */
/* 622 */ 0x5c,               /* FC_PAD */
                              0x5b,               /*
FC_END */
/* 624 */
                              0x12, 0x0,          /*
FC_UP */
/* 626 */ NdrFcShort( 0xffffffe0 ),     /* Offset= -
32 (594) */
/* 628 */
                              0x21,               /*
FC_BOGUS_ARRAY */
```

```
                              0x3,                /*
3 */
/* 630 */ NdrFcShort( 0x0 ),  /* 0 */
/* 632 */ 0x19,               /* Corr desc:  field
pointer, FC_ULONG */
                              0x0,                /*
*/
/* 634 */ NdrFcShort( 0x0 ),  /* 0 */
/* 636 */ NdrFcShort( 0x1 ),  /* Corr flags:  early,
*/
/* 638 */ NdrFcLong( 0xffffffff ),      /* -1 */
/* 642 */ NdrFcShort( 0x0 ),  /* Corr flags:  */
/* 644 */
                              0x12, 0x0,          /*
FC_UP */
/* 646 */ NdrFcShort( 0xffffffd8 ),     /* Offset= -
40 (606) */
/* 648 */ 0x5c,               /* FC_PAD */
                              0x5b,               /*
FC_END */
/* 650 */
                              0x1a,               /*
FC_BOGUS_STRUCT */
                              0x3,                /*
3 */
/* 652 */ NdrFcShort( 0x10 ), /* 16 */
/* 654 */ NdrFcShort( 0x0 ),  /* 0 */
/* 656 */ NdrFcShort( 0x6 ),  /* Offset= 6 (662) */
/* 658 */ 0x8,                /* FC_LONG */
                              0x39,               /*
FC_ALIGNM8 */
/* 660 */ 0x36,               /* FC_POINTER */
                              0x5b,               /*
FC_END */
/* 662 */
                              0x11, 0x0,          /*
FC_RP */
/* 664 */ NdrFcShort( 0xffffffdc ),     /* Offset= -
36 (628) */
/* 666 */
                              0x1d,               /*
FC_SMFARRAY */
                              0x0,                /*
0 */
/* 668 */ NdrFcShort( 0x8 ),  /* 8 */
/* 670 */ 0x1,                /* FC_BYTE */
                              0x5b,               /*
FC_END */
/* 672 */
                              0x15,               /*
FC_STRUCT */
                              0x3,                /*
3 */
/* 674 */ NdrFcShort( 0x10 ), /* 16 */
/* 676 */ 0x8,                /* FC_LONG */
                              0x6,                /*
FC_SHORT */
/* 678 */ 0x6,                /* FC_SHORT */
                              0x4c,               /*
FC_EMBEDDED_COMPLEX */
/* 680 */ 0x0,                /* 0 */
                              NdrFcShort( 0xfffffff1
),        /* Offset= -15 (666) */
```

```
                              0x5b,               /*
FC_END */
/* 684 */
                              0x1a,               /*
FC_BOGUS_STRUCT */
                              0x3,                /*
3 */
/* 686 */ NdrFcShort( 0x20 ), /* 32 */
/* 688 */ NdrFcShort( 0x0 ),  /* 0 */
/* 690 */ NdrFcShort( 0xa ),  /* Offset= 10 (700) */
/* 692 */ 0x8,                /* FC_LONG */
                              0x39,               /*
FC_ALIGNM8 */
/* 694 */ 0x36,               /* FC_POINTER */
                              0x4c,               /*
FC_EMBEDDED_COMPLEX */
/* 696 */ 0x0,                /* 0 */
                              NdrFcShort( 0xffffffe7
),        /* Offset= -25 (672) */
                              0x5b,               /*
FC_END */
/* 700 */
                              0x11, 0x0,          /*
FC_RP */
/* 702 */ NdrFcShort( 0xffffff10 ),     /* Offset= -
240 (462) */
/* 704 */
                              0x1b,               /*
FC_CARRAY */
                              0x0,                /*
0 */
/* 706 */ NdrFcShort( 0x1 ),  /* 1 */
/* 708 */ 0x19,               /* Corr desc:  field
pointer, FC_ULONG */
                              0x0,                /*
*/
/* 710 */ NdrFcShort( 0x0 ),  /* 0 */
/* 712 */ NdrFcShort( 0x1 ),  /* Corr flags:  early,
*/
/* 714 */ 0x1,                /* FC_BYTE */
                              0x5b,               /*
FC_END */
/* 716 */
                              0x1a,               /*
FC_BOGUS_STRUCT */
                              0x3,                /*
3 */
/* 718 */ NdrFcShort( 0x10 ), /* 16 */
/* 720 */ NdrFcShort( 0x0 ),  /* 0 */
/* 722 */ NdrFcShort( 0x6 ),  /* Offset= 6 (728) */
/* 724 */ 0x8,                /* FC_LONG */
                              0x39,               /*
FC_ALIGNM8 */
/* 726 */ 0x36,               /* FC_POINTER */
                              0x5b,               /*
FC_END */
/* 728 */
                              0x12, 0x0,          /*
FC_UP */
/* 730 */ NdrFcShort( 0xffffffe6 ),     /* Offset= -
26 (704) */
/* 732 */
```

```
                              0x1b,               /*
FC_CARRAY */
                              0x1,                /*
1 */
/* 734 */ NdrFcShort( 0x2 ),  /* 2 */
/* 736 */ 0x19,               /* Corr desc:  field
pointer, FC_ULONG */
                              0x0,                /*
*/
/* 738 */ NdrFcShort( 0x0 ),  /* 0 */
/* 740 */ NdrFcShort( 0x1 ),  /* Corr flags:  early,
*/
/* 742 */ 0x6,                /* FC_SHORT */
                              0x5b,               /*
FC_END */
/* 744 */
                              0x1a,               /*
FC_BOGUS_STRUCT */
                              0x3,                /*
3 */
/* 746 */ NdrFcShort( 0x10 ), /* 16 */
/* 748 */ NdrFcShort( 0x0 ),  /* 0 */
/* 750 */ NdrFcShort( 0x6 ),  /* Offset= 6 (756) */
/* 752 */ 0x8,                /* FC_LONG */
                              0x39,               /*
FC_ALIGNM8 */
/* 754 */ 0x36,               /* FC_POINTER */
                              0x5b,               /*
FC_END */
/* 756 */
                              0x12, 0x0,          /*
FC_UP */
/* 758 */ NdrFcShort( 0xffffffe6 ),     /* Offset= -
26 (732) */
/* 760 */
                              0x1b,               /*
FC_CARRAY */
                              0x3,                /*
3 */
/* 762 */ NdrFcShort( 0x4 ),  /* 4 */
/* 764 */ 0x19,               /* Corr desc:  field
pointer, FC_ULONG */
                              0x0,                /*
*/
/* 766 */ NdrFcShort( 0x0 ),  /* 0 */
/* 768 */ NdrFcShort( 0x1 ),  /* Corr flags:  early,
*/
/* 770 */ 0x8,                /* FC_LONG */
                              0x5b,               /*
FC_END */
/* 772 */
                              0x1a,               /*
FC_BOGUS_STRUCT */
                              0x3,                /*
3 */
/* 774 */ NdrFcShort( 0x10 ), /* 16 */
/* 776 */ NdrFcShort( 0x0 ),  /* 0 */
/* 778 */ NdrFcShort( 0x6 ),  /* Offset= 6 (784) */
/* 780 */ 0x8,                /* FC_LONG */
                              0x39,               /*
FC_ALIGNM8 */
/* 782 */ 0x36,               /* FC_POINTER */
```

```
                              0x5b,               /*
FC_END */
/* 784 */
                              0x12, 0x0,          /*
FC_UP */
/* 786 */ NdrFcShort( 0xffffffe6 ),     /* Offset= -
26 (760) */
/* 788 */
                              0x1b,               /*
FC_CARRAY */
                              0x7,                /*
7 */
/* 790 */ NdrFcShort( 0x8 ),  /* 8 */
/* 792 */ 0x19,               /* Corr desc:  field
pointer, FC_ULONG */
                              0x0,                /*
*/
/* 794 */ NdrFcShort( 0x0 ),  /* 0 */
/* 796 */ NdrFcShort( 0x1 ),  /* Corr flags:  early,
*/
/* 798 */ 0xb,                /* FC_HYPER */
                              0x5b,               /*
FC_END */
/* 800 */
                              0x1a,               /*
FC_BOGUS_STRUCT */
                              0x3,                /*
3 */
/* 802 */ NdrFcShort( 0x10 ), /* 16 */
/* 804 */ NdrFcShort( 0x0 ),  /* 0 */
/* 806 */ NdrFcShort( 0x6 ),  /* Offset= 6 (812) */
/* 808 */ 0x8,                /* FC_LONG */
                              0x39,               /*
FC_ALIGNM8 */
/* 810 */ 0x36,               /* FC_POINTER */
                              0x5b,               /*
FC_END */
/* 812 */
                              0x12, 0x0,          /*
FC_UP */
/* 814 */ NdrFcShort( 0xffffffe6 ),     /* Offset= -
26 (788) */
/* 816 */
                              0x15,               /*
FC_STRUCT */
                              0x3,                /*
3 */
/* 818 */ NdrFcShort( 0x8 ),  /* 8 */
/* 820 */ 0x8,                /* FC_LONG */
                              0x8,                /*
FC_LONG */
/* 822 */ 0x5c,               /* FC_PAD */
                              0x5b,               /*
FC_END */
/* 824 */
                              0x1b,               /*
FC_CARRAY */
                              0x3,                /*
3 */
/* 826 */ NdrFcShort( 0x8 ),  /* 8 */
/* 828 */ 0x7,                /* Corr desc: FC_USHORT
*/
```

```
                              0x0,                /*
*/
/* 830 */ NdrFcShort( 0xffc8 ),         /* -56 */
/* 832 */ NdrFcShort( 0x1 ),  /* Corr flags:  early,
*/
/* 834 */ 0x4c,               /* FC_EMBEDDED_COMPLEX
*/
                              0x0,                /*
0 */
/* 836 */ NdrFcShort( 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)*/
```

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_dblib.cpp

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

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

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

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

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

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

#define   DEFCLPACKSIZE
          4096

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

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

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

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

          DisableThreadLibraryCalls(hModule);
                              dbinit();           //
initialize dblib
                              break;

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

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

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

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

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

/* FUNCTION: int msg_handler(DBPROCESS *dbproc, DBINT
msgno, int msgstate, int severity, char *msgtext)
 *
 * PURPOSE:         This function handles DB-Library
SQL Server error messages
 *
 * ARGUMENTS:       DBPROCESS           *dbproc
                    DBPROCESS id pointer
 *                                      DBINT
                    msgno
          message number
 *                                      int
                              msgstate
          message state
 *                                      int
                              severity
          message severity
 *                                      char
                    *msgtext            printable
message description
 *
 * RETURNS:                   int
                    INT_CONTINUE        continue if
error is SQLETIME else INT_CANCEL action
 *
                              INT_CANCEL
          cancel operation
 *
 * COMMENTS:        This function also sets the dead
lock dbproc variable if necessary.
 *
 */

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

int msg_handler(DBPROCESS *dbproc, DBINT msgno, int
msgstate, int severity,
                                        LPCSTR
msgtext, LPCSTR srvname, LPCSTR procname, DBUSMALLINT
line)
{
```

```
          CTPCC_DBLIB
          *pConn;

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

          if (pConn != NULL)
          {
                    pConn->SetSqlError( msgno,
msgstate, severity, msgtext );
          }

          return 0;
}

/* FUNCTION: void UtilStrCpy(char * pDest, char *
pSrc, int n)
 *
 * PURPOSE:         This function copies n characters
from string pSrc to pDst and places a
 *                            null character at the
end of the destination string.
 *
 * ARGUMENTS:       char
          *pDest    destination string pointer
 *                                      char
          *pSrc     source string pointer
 *                                      int
                              n
          number of characters to copy
 *
 * RETURNS:                   None
 *
 * COMMENTS:        Unlike strncpy this function
ensures that the result string is
 *                                      always null
terminated.
 *
 */

inline static void UtilStrCpy(char * pDest, const
BYTE * pSrc, int n)
{
    strncpy(pDest, (char *)pSrc, n);
    pDest[n] = '\0';

          return;
}

/* FUNCTION: CTPCC_DBLIB_ERR::ErrorText
 *
 */

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

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



          }
          };

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

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

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


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

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

          m_MaxRetries = 10;            // how many
retries on deadlock

          // increase max number of connections if
getting close
          if ( dbgetmaxprocs() < (iConnectionCount+5)
)
          {
                    if (
dbsetmaxprocs(iConnectionCount+10) == FAIL )

          ThrowError(CDBLIBERR::eDbSetMaxProcs);
          }

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

          // register error and message handler
functions
          if (dbprocerrhandle(login, err_handler) ==
NULL)

          ThrowError(CDBLIBERR::eDbProcHandler);

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

          ThrowError(CDBLIBERR::eDbProcHandler);


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

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

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

          m_dbproc = dbopen(login, szServer);

          // deallocate login structure before
checking for success
          dbfreelogin( login );
```

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

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

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

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

        if (dbsqlexec(m_dbproc) == FAIL)

        ThrowError(CDBLIBERR::eDbSqlExec);

        DiscardNextResults(2);

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

        if (dbrpcexec(m_dbproc) == FAIL)

        ThrowError(CDBLIBERR::eDbRpcExec);

        if (dbresults(m_dbproc) != SUCCEED)

        ThrowError(CDBLIBERR::eDbResults);

        if (dbnextrow(m_dbproc) != REG_ROW)

        ThrowError(CDBLIBERR::eDbNextRow);

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


        DiscardNextRows(0);
        DiscardNextResults(0);
}


CTPCC_DBLIB::~CTPCC_DBLIB( void )
{
        // close db connection and deallocate
resources
        dbclose(m_dbproc);
        InterlockedDecrement( &iConnectionCount );
        if (m_DbLibErr != NULL)
```

```
                delete m_DbLibErr;
        if (m_SqlErr != NULL)
                delete m_SqlErr;
}

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

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

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

}

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

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

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

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

        // check for SQL Server error first;  if
yes, throw it and ignore any DBLib error.
        if (m_SqlErr != NULL)
        {
                CSQLERR             *pSqlErr;
```

```
                pSqlErr = m_SqlErr;
                m_SqlErr = NULL;    // clear our
pointer to instance; catch handler will delete
                throw pSqlErr;
        }

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

        throw pDbLibErr;
}

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

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

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

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

        ThrowError(CDBLIBERR::eWrongRowCount);
}

// Read and discard results until no more.  Throw an
exception if number of result sets read doesn't
```

```
// match number expected.  The result set count will
be ignored if the expected count value
// passed in is negative.  A typical use of this
routine is to verify that there are no more
// result sets to be read.
void CTPCC_DBLIB::DiscardNextResults(int
iExpectedCount)
{
          int                 iResultsRead = 0;
          RETCODE   rc;

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

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

                    DiscardNextRows(-1);
                    iResultsRead++;
          }

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

          ThrowError(CDBLIBERR::eWrongRowCount);
}

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

          ResetError();

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

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

```

                              if (dbrpcexec(m_dbproc)
== FAIL)

          ThrowError(CDBLIBERR::eDbRpcExec);

                              if (dbresults(m_dbproc)
!= SUCCEED)

          ThrowError(CDBLIBERR::eDbResults);

                              if (dbnextrow(m_dbproc)
!= REG_ROW)

          ThrowError(CDBLIBERR::eDbNextRow);

                              if
(pData=dbdata(m_dbproc, 1))

          m_txn.StockLevel.low_stock = *((long *)
pData);

                              DiscardNextRows(0);
                              DiscardNextResults(0);


          m_txn.StockLevel.exec_status_code = eOK;
                              return;
                    }
                    catch (CSQLERR *e)
                    {
                              if ((e->m_msgno == 1205
||

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

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


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

```
          DBDATEREC daterec;

          int                           iTryCount =
0;
          const BYTE          *pData;

          ResetError();

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

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

                              // check whether any
order lines are for a remote warehouse

          m_txn.NewOrder.o_all_local = 1;
                              for (i = 0; i <
m_txn.NewOrder.o_ol_cnt; i++)
                              {
                                        if
(m_txn.NewOrder.OL[i].ol_supply_w_id !=
m_txn.NewOrder.w_id)
                                        {

          m_txn.NewOrder.o_all_local = 0;  // at
least one remote warehouse

          break;
                                        }
                              }
                              dbrpcparam(m_dbproc,
NULL, 0, SQLINT1, -1, -1, (BYTE *)
&m_txn.NewOrder.o_all_local);

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

          dbrpcparam(m_dbproc, NULL, 0, SQLINT4, -1,
-1, (BYTE *) &m_txn.NewOrder.OL[i].ol_i_id);

          dbrpcparam(m_dbproc, NULL, 0, SQLINT2, -1,
-1, (BYTE *) &m_txn.NewOrder.OL[i].ol_supply_w_id);

          dbrpcparam(m_dbproc, NULL, 0, SQLINT2, -1,
-1, (BYTE *) &m_txn.NewOrder.OL[i].ol_quantity);
                              }
                              if (dbrpcexec(m_dbproc)
== FAIL)

          ThrowError(CDBLIBERR::eDbRpcExec);


                              // Get order line
results

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

          ThrowError(CDBLIBERR::eDbResults);

                                        if
(dbnumcols(m_dbproc) != 5)

          ThrowError(CDBLIBERR::eWrongNumCols);

                                        if
(dbnextrow(m_dbproc) != REG_ROW)

          ThrowError(CDBLIBERR::eDbNextRow);


          if(pData=dbdata(m_dbproc, 1))

          UtilStrCpy(m_txn.NewOrder.OL[i].ol_i_name,
pData, dbdatlen(m_dbproc, 1));

          if(pData=dbdata(m_dbproc, 2))

          m_txn.NewOrder.OL[i].ol_stock =
(*(DBSMALLINT *) pData);

          if(pData=dbdata(m_dbproc, 3))

          UtilStrCpy(m_txn.NewOrder.OL[i].ol_brand_ge
neric, 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.minut
e = daterec.minute;

          m_txn.OrderStatus.OL[i].ol_delivery_d.secon
d = 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;
}
```

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);
```

tpcc_enc.cpp

```
// ctpcc_enc.cpp: implementation of the CTPCC_ENCINA
class.
//
```

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

#include <windows.h>
#include <process.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>

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

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

#include "..\..\common\src\trans.h"
//tpckit transaction header contains definitions of
structures specific to TPC-C
#include "..\..\common\src\error.h"
#include "..\..\common\src\txn_base.h"
#include "tpcc_enc.h"
#include "..\include\tpcc_type.h"
#include "mon_client.h"
#include "client_utils.h"

static CRITICAL_SECTION         TpCriticalSection;
extern "C" char *errFile;

BOOL APIENTRY DllMain(HANDLE hModule, DWORD
ul_reason_for_call, LPVOID lpReserved)
{

        switch( ul_reason_for_call )
        {
                case DLL_PROCESS_ATTACH:


DisableThreadLibraryCalls(hModule);

InitializeCriticalSection(&TpCriticalSection);
                        break;

                case DLL_PROCESS_DETACH:

DeleteCriticalSection(&TpCriticalSection);
                        break;

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

// wrapper routine for class constructor
__declspec(dllexport) CTPCC_ENCINA*
CTPCC_ENCINA_new()
{
          return new CTPCC_ENCINA();
}

// wrapper routine for enroll_client
__declspec(dllexport) CTPCC_ENCINA*
CTPCC_ENCINA_post_init()
{
          enroll_client();
          return NULL;
}

// constructor and destructor
CTPCC_ENCINA::CTPCC_ENCINA()
{
          //        Add initialization of ENCINA
Structures if any
          m_txn = (ENC_DATA
*)malloc(sizeof(ENC_DATA));
          if (m_txn == NULL)
                    throw new
CENCERR(ERR_TYPE_MEMORY, ERR_FATAL_LEVEL);
}

CTPCC_ENCINA::~CTPCC_ENCINA()
{
          // free the data structure allocated with
tpalloc
          free((char *)m_txn);
}

void CTPCC_ENCINA::NewOrder()
{

          // question: if we need to prepare the
data?
    if (send_new_order(sizeof(ENC_DATA), (unsigned
char *)m_txn) == TRPC_ERROR)
                    throw new CENCERR(TRPC_ERROR);

    if ( m_txn->ErrorType != ERR_SUCCESS )
                    throw new CENCERR( m_txn-
>ErrorType, m_txn->error );
}

void CTPCC_ENCINA::Payment()
{
    if (send_payment(sizeof(ENC_DATA), (unsigned char
*)m_txn) == TRPC_ERROR)
                    throw new CENCERR(TRPC_ERROR);

    if ( m_txn->ErrorType != ERR_SUCCESS )
                    throw new CENCERR( m_txn-
>ErrorType, m_txn->error );
}

void CTPCC_ENCINA::Delivery()
{

          // Note: Delivery txn code in the tuxedo
server does not implement logging of the delivery
          //       txn results, so cannot be used as
is to run an auditable TPC-C result.  For that
          //       reason, delivery txns should not
be done via Tuxedo.
          //       The code is included for
completeness.
          //m_txn->u.Delivery.exec_status_code =
eDeliveryFailed;
          //return;

          // Note: If we use the delivery thread in
tpcc.dll, it is not possible to get to this
          //       point for delivery txns. But if we
use Encina delivery server, the code is
          //       needed. It is suggested using the
delivery thread in tpcc.dll since it is
          //       convenient and provides best
performance.
          GetLocalTime(&m_txn-
>u.Delivery.queue_time);

    if (send_delivery(sizeof(ENC_DATA), (unsigned
char *)m_txn) == TRPC_ERROR)
                    m_txn-
>u.Delivery.exec_status_code = eDeliveryFailed;
    else
                    m_txn-
>u.Delivery.exec_status_code = eOK;
}

void CTPCC_ENCINA::StockLevel()
{

    if (send_stock_level(sizeof(ENC_DATA), (unsigned
char *)m_txn) == TRPC_ERROR)
                    throw new CENCERR(TRPC_ERROR);

    if ( m_txn->ErrorType != ERR_SUCCESS )
                    throw new CENCERR( m_txn-
>ErrorType, m_txn->error );
}

void CTPCC_ENCINA::OrderStatus()
{

    if (send_order_status(sizeof(ENC_DATA), (unsigned
char *)m_txn) == TRPC_ERROR)
                    throw new CENCERR(TRPC_ERROR);

    if ( m_txn->ErrorType != ERR_SUCCESS )
                    throw new CENCERR( m_txn-
>ErrorType, m_txn->error );
}

char *CENCERR::ErrorText()
{
          if (m_iErrorType == TRPC_ERROR)
          {
                    sprintf( m_szErrorText, "Error:
ENCINA TRPC error (see log file %s for details)",
errFile);
          }
          else
                    sprintf( m_szErrorText, "Error:
Class %d, error # %d", m_iErrorType, m_iError );
```

```
          return m_szErrorText;
};
```

tpcc_enc.h

```
/*        FILE:               TPCC_ENCINA.H
 *                                      Microsoft
TPC-C Kit Ver. 4.10.000
 *                                      not yet
audited
 *
 *        PURPOSE:  Header file for TPC-C Encina
class implementation.
 *                                      Copyright
Microsoft, 1999
 *              All Rights Reserved
 *
 */

#if !defined(_TPCC_ENCINA_H_)
#define _TPCC_ENCINA_H_

#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 CTPCC_ENCINA : public CTPCC_BASE
{
          private:
                    struct ENC_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_txn;

          public:

                    CTPCC_ENCINA();
                    virtual ~CTPCC_ENCINA();

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

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


class CENCERR : public CBaseErr
{

          private:
                    char      m_szErrorText[64];
          public:
                    int                 m_errno;
          //
                    int                 m_iErrorType;
// match ErrorType in CTPCC_ENCINA
                    int                 m_iError;
          // machine error in CTPCC_ENCINA

                    // use this interface for genuine
Encina errors
                    CENCERR( int iErr )
                    {
                              m_errno = iErr;     //
ENCINA error
                              m_iErrorType =
ERR_TYPE_ENCINA;
                              m_iError = 0;       //
only meaningful if m_errno == TPEOS
                    };

                    // use this interface to
impersonate a non-Encina error type
                    CENCERR( int iErrorType, int
iError )
                    {
                              m_iErrorType =
iErrorType;
                              m_iError = iError;
                              m_errno = iError;   //
???
                    }

                    // A CENCERR class can
impersonate another class, which happens if the error
                    // was not actually a Tuxedo
error, but was simply transmitted back via Tuxedo.
                    int ErrorType()
                    {
                              return m_iErrorType;
                    }

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

// wrapper routine for class constructor:
extern "C" __declspec(dllexport) CTPCC_ENCINA*
CTPCC_ENCINA_new();
extern "C" __declspec(dllexport) CTPCC_ENCINA*
CTPCC_ENCINA_post_init();

typedef CTPCC_ENCINA* (TYPE_CTPCC_ENCINA)();

#endif // !defined(_TPCC_ENCINA_H_)
```

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


                                                  //
012345678901234567890123456789
          wchar_t
          szSqlTemplate[] = L"{call
tpcc_neworder(?,?,?,?,?,"


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


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

          m_hstmt = m_hstmtNewOrder;

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

          ThrowError(CODBCERR::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);
}
```

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);
```

tpcc_tux.cpp

```
/*        FILE:               TPCC_TUX.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
 */

#include <windows.h>
#include <process.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 <tmenv.h>
#include <xa.h>
#include <atmi.h>

#ifdef ICECAP
// for IceCAP profiling
#include <icapexp.h>
#endif

// 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_tux.h"
                    // interface to Tuxedo libraries
```

```
static TPINIT
          *tpinf;
static DWORD
          TLSIsTpInitedKey;
static CRITICAL_SECTION
          TpCriticalSection;


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

          DisableThreadLibraryCalls(hModule);

                              // create thread local
storage to determine Tuxedo initialization per
thread.
                              // it really should be
possible to do this in the DLL_THREAD_ATTACH call,
but
                              // Ed says he could not
get it to work.
                              // assumption:value
init'd to 0
                              TLSIsTpInitedKey =
TlsAlloc();

                              if ((tpinf = (TPINIT
*)tpalloc("TPINIT", NULL, sizeof(TPINIT))) == NULL)
                              {
                                        // int TpRc =
tperrno;
                                        return FALSE;
                              }
                              tpinf->flags |=
TPMULTICONTEXTS;


          InitializeCriticalSection(&TpCriticalSectio
n);
                              break;

                    case DLL_PROCESS_DETACH:

          TlsFree(TLSIsTpInitedKey);

          DeleteCriticalSection(&TpCriticalSection);
                              break;

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

static void ThrTpInit()
{
          static int num_tpinits=0;
          int iRc, TpRc;

          // has this thread been initialized?  check
thread local storage
          if(!TlsGetValue(TLSIsTpInitedKey))
          {

          EnterCriticalSection(&TpCriticalSection);
                    itoa(++num_tpinits, tpinf-
>cltname, 10);

                    iRc = tpinit(tpinf);
                    TpRc = tperrno;

          LeaveCriticalSection(&TpCriticalSection);

                    if (iRc < 0)
                              throw new CTUXERR(
tperrno );

                    int value = 1;

          TlsSetValue(TLSIsTpInitedKey,&value);
          }
}

// wrapper routine for class constructor
__declspec(dllexport) CTPCC_TUXEDO*
CTPCC_TUXEDO_new()
{
          return new CTPCC_TUXEDO();
}

CTPCC_TUXEDO::CTPCC_TUXEDO()
{
          //        Add initialization of Tuxedo
Structures
          m_txn = (TUX_DATA *)tpalloc("CARRAY", NULL,
sizeof(TUX_DATA));
          if (m_txn == NULL)
                    throw new CTUXERR( tperrno );
}

CTPCC_TUXEDO::~CTPCC_TUXEDO()
{
          // free the data structure allocated with
tpalloc
          tpfree((char *)m_txn);
}

void CTPCC_TUXEDO::NewOrder()
{
          long      ilen, *olen;

          ThrTpInit();

          ilen = sizeof(TUX_DATA);
          olen = &ilen;

          if (tpcall("NEWORDER", (char *)m_txn, ilen,
(char **)&m_txn, (long *)olen, TPSIGRSTRT) == -1)
                    throw new CTUXERR( tperrno );

          if ( m_txn->ErrorType != ERR_SUCCESS )
                    throw new CTUXERR( m_txn-
>ErrorType, m_txn->error );
}

void CTPCC_TUXEDO::Payment()
{
          long      ilen, *olen;

          ThrTpInit();

          ilen = sizeof(TUX_DATA);
          olen = &ilen;

          if (tpcall("PAYMENT", (char *)m_txn, ilen,
(char **)&m_txn, (long *)olen, TPSIGRSTRT) == -1)
                    throw new CTUXERR( tperrno );

          if ( m_txn->ErrorType != ERR_SUCCESS )
                    throw new CTUXERR( m_txn-
>ErrorType, m_txn->error );
}

void CTPCC_TUXEDO::Delivery()
{
          int                 iRc;
          long      ilen, *olen;

          // Note: Delivery txn code in the tuxedo
server does not implement logging of the delivery
          //       txn results, so cannot be used as
is to run an auditable TPC-C result.  For that
          //       reason, delivery txns should not
be done via tuxedo.
          //       The code is included for
completeness.
          m_txn->u.Delivery.exec_status_code =
eDeliveryFailed;
          return;

          //  normal path...

          ThrTpInit();

          GetLocalTime(&m_txn-
>u.Delivery.queue_time);

          ilen = sizeof(TUX_DATA);
          olen = &ilen;

          if ((iRc = tpacall("DELIVERY", (char
*)m_txn, ilen, TPNOREPLY)) == -1)
          {
                    int TpRc = tperrno;
                    m_txn-
>u.Delivery.exec_status_code = eDeliveryFailed;
          }
          else
                    m_txn-
>u.Delivery.exec_status_code = eOK;

}

void CTPCC_TUXEDO::StockLevel()
```

```
{
          long      ilen, *olen;

          ThrTpInit();

          ilen = sizeof(TUX_DATA);
          olen = &ilen;

          if (tpcall("STOCKLEVEL", (char *)m_txn,
ilen, (char **)&m_txn, (long *)olen, TPSIGRSTRT) == -
1)
                    throw new CTUXERR( tperrno );

          if ( m_txn->ErrorType != ERR_SUCCESS )
                    throw new CTUXERR( m_txn-
>ErrorType, m_txn->error );
}

void CTPCC_TUXEDO::OrderStatus()
{
          long      ilen, *olen;

          ThrTpInit();

          ilen = sizeof(TUX_DATA);
          olen = &ilen;

          if (tpcall("ORDERSTATUS", (char *)m_txn,
ilen, (char **)&m_txn, (long *)olen, TPSIGRSTRT) == -
1)
                    throw new CTUXERR( tperrno );

          if ( m_txn->ErrorType != ERR_SUCCESS )
                    throw new CTUXERR( m_txn-
>ErrorType, m_txn->error );
}

char *CTUXERR::ErrorText()
{
          if (m_iErrorType == 0)
          {
                    if (m_errno == TPEOS)
                              sprintf( m_szErrorText,
"Error: TUXEDO error # %d, OS error # %d", m_errno,
m_iError );
                    else
                              sprintf( m_szErrorText,
"Error: TUXEDO error # %d", m_errno );
          }
          else
                    sprintf( m_szErrorText, "Error:
Class %d, error # %d", m_iErrorType, m_iError );
          return m_szErrorText;
};
```

tpcc_tux.h

```
/*        FILE:               TPCC_TUX.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 Tuxedo
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_TUXEDO : public CTPCC_BASE
{
          private:
                    struct TUX_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_txn;

          public:
                    CTPCC_TUXEDO();
                    ~CTPCC_TUXEDO(void);

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

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

};

class CTUXERR : public CBaseErr
{
          private:

                    // TODO: should use the sz_Msg
field of the base class instead
                    char m_szErrorText[64];

          public:
                    // use this interface for genuine
Tuxedo errors
                    CTUXERR( int iErr )
                    {
                              m_errno = iErr;
                              m_iErrorType = 0;
                              m_iError =
GetLastError();     // only meaningful if m_errno ==
TPEOS
                    };

                    // use this interface to
impersonate a non-Tuxedo error type
                    CTUXERR( int iErrorType, int
iError )
                    {
                              m_iErrorType =
iErrorType;
                              m_iError = iError;
                              m_errno = 0;
                    }

                    int                 m_errno;
                    int                 m_iErrorType;
                    int                 m_iError;

                    // A CTUXERR class can
impersonate another class, which happens if the error
                    // was not actually a Tuxedo
error, but was simply transmitted back via Tuxedo.
                    int ErrorType()
                    {
                              if (m_iErrorType == 0)
                                        return
ERR_TYPE_TUXEDO;
                              else
                                        return
m_iErrorType;
                    }
                    int ErrorNum() {return m_errno;};
                    char *ErrorText();
};

// wrapper routine for class constructor
extern "C" __declspec(dllexport) CTPCC_TUXEDO*
CTPCC_TUXEDO_new();

typedef CTPCC_TUXEDO* (TYPE_CTPCC_TUXEDO)();
```

tpcc_type.h

```
/* Generated by IDL compiler version DEC DCE V2.0.0-6
*/
#ifndef tpcc_types_v1_0_included
#define tpcc_types_v1_0_included
#ifndef IDLBASE_H
#include <dce\idlbase.h>
#endif

#ifdef __cplusplus
    extern "C" {
#endif

#ifndef nbase_v0_0_included
#include "dce\nbase.h"
#endif
#define NAME_LENGTH (32)
#define NEWO_INTERFACE (1)
#define PAYMENT_INTERFACE (2)
#define ORDER_STAT_INTERFACE (4)
#define DELIVERY_INTERFACE (8)
#define STOCK_INTERFACE (16)
#define ONLINE_INTERFACES (23)
#define ALL_INTERFACE (65535)
#define NEWO_TRANS (1)
#define PAYMENT_TRANS (2)
#define ORDER_STAT_TRANS (3)
#define DELIVERY_TRANS (4)
#define STOCK_TRANS (5)
#define MAX_TRAN_TYPE (5)
#define TPCC_SUCCESS (0)
#define TRPC_ERROR (1)
#define INVALID_NEWO (100)
typedef struct  {
idl_long_int sec;
idl_long_int usec;
} time_type;
typedef struct  {
idl_short_int returncode;
idl_short_int stats;
time_type srv_start;
time_type srv_end;
time_type clnt_start;
time_type clnt_end;
} data_header;
typedef struct  {
idl_long_int first_wh;
idl_long_int last_wh;
idl_long_int server_id;
} dbInfo_data_t;

#ifdef __cplusplus
    }

#endif
#endif
```

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;
```

tuxapp.cpp

```
/*        FILE:               TUXAPP.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
server.
 *         Contact:  Charles Levine
(clevine@microsoft.com)
 *
 *  Change history:
 *                   4.20.000 - updated rev number to
match kit
 */

#include <windows.h>
#include <process.h>
#include <tchar.h>
#include <stdio.h>
#include <stdarg.h>
#include <iostream.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>
#include <sql.h>
#include <sqlext.h>

#include <tmenv.h>
#include <xa.h>
#include <atmi.h>

#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 "..\..\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 "tuxapp.h"

char
          szMyComputerName[MAX_COMPUTERNAME_LENGTH+1]
;

// configuration settings from registry
TPCCREGISTRYDATA              Reg;

CTPCC_BASE                    *pTxn = NULL;


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

/* FUNCTION: tpsvrinit ( int argc, char *argv[])
 *
 * PURPOSE:         Initialize the Server to Database
connection.
 *
 * RETURNS:                   int       0
          Success
 *                                                   -1
          Failure
 */

int tpsvrinit ( int argc, char *argv[] )
{
          try
          {
                    DWORD dwSize =
MAX_COMPUTERNAME_LENGTH+1;
                    GetComputerName(szMyComputerName,
&dwSize);
                    szMyComputerName[dwSize] = 0;

                    if ( ReadTPCCRegistrySettings(
&Reg ) )
                              throw new CTUXAPP_ERR(
ERR_MISSING_REGISTRY_ENTRIES );

                    GetParameters(argc, argv);

                    switch (Reg.eDB_Protocol)
                    {
                    case ODBC:
                              pTxn = new CTPCC_ODBC(
Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword,
szMyComputerName, Reg.szDbName );
                              break;
                    case DBLIB:
                              pTxn = new CTPCC_DBLIB(
Reg.szDbServer, Reg.szDbUser, Reg.szDbPassword,
szMyComputerName, Reg.szDbName );
                              break;
                    }
          }
          catch (CBaseErr *e)
          {
                    WriteMessageToEventLog(e-
>ErrorText());
                    delete e;
          }
          catch (...)
          {

          WriteMessageToEventLog(TEXT("Unhandled
exception."));
          }

          return 0;
}

/* FUNCTION: tpsvrdone ( void )
 *
 */

void tpsvrdone ( void )
{
          delete pTxn;
          pTxn = NULL;
}

/* FUNCTION: BOOL GetParameters(int argc, char
*argv[])
 *
 * PURPOSE:         This function parses the command
line passed in to the delivery executable,
initializing
 *                            and filling in global
variable parameters.
 *
 * ARGUMENTS:       int                 argc
          number of command line arguments passed to
delivery
 *                                      char
          *argv[]   array of command line argument
pointers
 *
 */

static void GetParameters(int argc, char *argv[])
{
          // advance through args until "--" is found
          for(int j=0; j<argc; j++)
          {
                    if (strcmp(argv[j],"--") == 0)
                              break;
          }

          for(int i=j+1; i<argc; i++)
          {
                    if ( argv[i][0] == '-' ||
argv[i][0] == '/' )
                    {
                              switch(argv[i][1])
                              {
                                        case 'S':

          strcpy(Reg.szDbServer, argv[i]+2);

          break;
                                        case 'D':

          strcpy(Reg.szDbName, argv[i]+2);

          break;
                                        case 'P':

          strcpy(Reg.szDbPassword, argv[i]+2);

          break;
                                        case 'U':

          strcpy(Reg.szDbUser, argv[i]+2);

          break;
                                        default:

          cout << "Microsoft TPC-C Kit" << endl;

          cout << "Tuxedo Server" << endl << endl;
          cout << "Usage:" << endl;

          cout << "    tuxapp [<tuxedo-args>] -- -
S<sql-server> [-D<database>] [-U<user>] [-
P<password>]" << endl << endl;

          cout << "All parameters default to values
in registry." << endl;

          throw new CTUXAPP_ERR( ERR_BAD_SYNTAX );
                              }
                    }
          }
}

static void WriteMessageToEventLog(LPTSTR lpszMsg)
{
    TCHAR   szMsg[256];
    HANDLE  hEventSource;
    LPTSTR  lpszStrings[2];

    // Use event logging to log the error.
    //
    hEventSource = RegisterEventSource(NULL,
TEXT("TUXAPP.EXE"));

    _stprintf(szMsg, TEXT("Error in TUXAPP.EXE: "));
    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);
    }
}

void NEWORDER( TPSVCINFO *rqst )
{
          PNEW_ORDER_DATA     pNewOrder;
          TUX_DATA            *pData;
          const int           iSize = sizeof(pData-
>u.NewOrder);

          try
          {
                    pData = (TUX_DATA*)rqst->data;
                    pData->retval = ERR_SUCCESS;
```

```
                    pData->error = 0;

                    pNewOrder = pTxn-
>BuffAddr_NewOrder();
                    assert( rqst->len ==
sizeof(TUX_DATA) );
                    memcpy(pNewOrder, &pData-
>u.NewOrder, iSize );

                    pTxn->NewOrder();
                    memcpy( &pData->u.NewOrder,
pNewOrder, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
          }
          catch (CBaseErr *e)
          {
                    pData->retval = e->ErrorType();
                    pData->error = e->ErrorNum();
                    memcpy( &pData->u.NewOrder,
pNewOrder, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
                    delete e;
          }
          catch (...)
          {

          WriteMessageToEventLog(TEXT("Unhandled
exception."));
                    pData->retval = ERR_TYPE_LOGIC;
                    pData->error = 0;
                    memcpy( &pData->u.NewOrder,
pNewOrder, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
          }
}

void PAYMENT( TPSVCINFO *rqst )
{
          PPAYMENT_DATA       pPayment;
          TUX_DATA            *pData;
          const int           iSize = sizeof(pData-
>u.Payment);

          try
          {
                    pData = (TUX_DATA*)rqst->data;
                    pData->retval = ERR_SUCCESS;
                    pData->error = 0;

                    pPayment = pTxn-
>BuffAddr_Payment();
                    assert( rqst->len ==
sizeof(TUX_DATA) );
                    memcpy(pPayment, &pData-
>u.Payment, iSize );

                    pTxn->Payment();
                    memcpy( &pData->u.Payment,
pPayment, iSize );
```

```
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
          }
          catch (CBaseErr *e)
          {
                    pData->retval = e->ErrorType();
                    pData->error = e->ErrorNum();
                    memcpy( &pData->u.Payment,
pPayment, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
                    delete e;
          }
          catch (...)
          {

          WriteMessageToEventLog(TEXT("Unhandled
exception."));
                    pData->retval = ERR_TYPE_LOGIC;
                    pData->error = 0;
                    memcpy( &pData->u.Payment,
pPayment, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
          }
}

// Note: Delivery txn code below does not implement
logging of the delivery
//       txn results, so cannot be used as is to run
an auditable TPC-C result.
//       The code is included for completeness.
void DELIVERY( TPSVCINFO *rqst )
{
          PDELIVERY_DATA      pDelivery;
          TUX_DATA            *pData;
          const int           iSize = sizeof(pData-
>u.Delivery);

          try
          {
                    pData = (TUX_DATA*)rqst->data;
                    pData->retval = ERR_SUCCESS;
                    pData->error = 0;

                    pDelivery = pTxn-
>BuffAddr_Delivery();
                    assert( rqst->len ==
sizeof(TUX_DATA) );
                    memcpy(pDelivery, &pData-
>u.Delivery, iSize );

                    pTxn->Delivery();

                    memcpy( &pData->u.Delivery,
pDelivery, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
          }
          catch (CBaseErr *e)
          {
                    pData->retval = e->ErrorType();
                    pData->error = e->ErrorNum();
                    memcpy( &pData->u.Delivery,
pDelivery, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
                    delete e;
          }
          catch (...)
          {

          WriteMessageToEventLog(TEXT("Unhandled
exception."));
                    pData->retval = ERR_TYPE_LOGIC;
                    pData->error = 0;
                    memcpy( &pData->u.Delivery,
pDelivery, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
          }
}

void STOCKLEVEL( TPSVCINFO *rqst )
{
          PSTOCK_LEVEL_DATA   pStockLevel;
          TUX_DATA                      *pData;
          const int                     iSize =
sizeof(pData->u.StockLevel);

          try
          {
                    pData = (TUX_DATA*)rqst->data;
                    pData->retval = ERR_SUCCESS;
                    pData->error = 0;

                    pStockLevel = pTxn-
>BuffAddr_StockLevel();
                    assert( rqst->len ==
sizeof(TUX_DATA) );
                    memcpy(pStockLevel, &pData-
>u.StockLevel, iSize );

                    pTxn->StockLevel();
                    memcpy( &pData->u.StockLevel,
pStockLevel, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
          }
          catch (CBaseErr *e)
          {
                    pData->retval = e->ErrorType();
                    pData->error = e->ErrorNum();
                    memcpy( &pData->u.StockLevel,
pStockLevel, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
                    delete e;
          }
          catch (...)
          {

          WriteMessageToEventLog(TEXT("Unhandled
exception."));
                    pData->retval = ERR_TYPE_LOGIC;
                    pData->error = 0;
                    memcpy( &pData->u.StockLevel,
pStockLevel, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
          }
}

void ORDERSTATUS( TPSVCINFO *rqst )
{
          PORDER_STATUS_DATA  pOrderStatus;
          TUX_DATA            *pData;
          const int iSize = sizeof(pData-
>u.OrderStatus);

          try
          {
                    pData = (TUX_DATA*)rqst->data;
                    pData->retval = ERR_SUCCESS;
                    pData->error = 0;

                    pOrderStatus = pTxn-
>BuffAddr_OrderStatus();
                    assert( rqst->len ==
sizeof(TUX_DATA) );
                    memcpy(pOrderStatus, &pData-
>u.OrderStatus, iSize );

                    pTxn->OrderStatus();
                    memcpy( &pData->u.OrderStatus,
pOrderStatus, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
          }
          catch (CBaseErr *e)
          {
                    pData->retval = e->ErrorType();
                    pData->error = e->ErrorNum();
                    memcpy( &pData->u.OrderStatus,
pOrderStatus, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
                    delete e;
          }
          catch (...)
          {

          WriteMessageToEventLog(TEXT("Unhandled
exception."));
                    pData->retval = ERR_TYPE_LOGIC;
                    pData->error = 0;
                    memcpy( &pData->u.OrderStatus,
pOrderStatus, iSize );
                    tpreturn( TPSUCCESS, 0, rqst-
>data, sizeof(TUX_DATA), 0);
          }
}

/* FUNCTION: CTUXAPP_ERR::ErrorText
 *
 */

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

          static SERRORMSG errorMsgs[] =
          {
                    { ERR_MISSING_REGISTRY_ENTRIES,
          "Required entries missing from registry."
                              },
                    { ERR_BAD_SYNTAX,
                    "Syntax error in input
parameters."
          },
                    { ERR_UNKNOWN_DB_PROTOCOL,
          "Unknown database protocol specified in
registry."          },
                    { 0,
                                        ""



                    }
          };

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

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

tuxapp.dsp

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

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

CFG=tuxapp - 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 "tuxapp.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 "tuxapp.mak" CFG="tuxapp - Win32
Debug"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "tuxapp - Win32 Release" (based on "Win32
(x86) Console Application")
!MESSAGE "tuxapp - Win32 Debug" (based on "Win32
(x86) Console Application")
!MESSAGE

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

!IF  "$(CFG)" == "tuxapp - 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 "_CONSOLE" /D "_MBCS" /YX /FD /c
# ADD CPP /nologo /MD /W3 /GX /O2 /D "WIN32" /D
"NDEBUG" /D "_CONSOLE" /D "_MBCS" /YX /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 ..\db_dblib_dll\bin\tpcc_dblib.lib
..\db_odbc_dll\bin\tpcc_odbc.lib libtux.lib
libbuft.lib libtux2.lib libfml.lib libfml32.lib
libgp.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 /machine:I386

!ELSEIF  "$(CFG)" == "tuxapp - 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 "_CONSOLE" /D "_MBCS" /YX /FD /c
# ADD CPP /nologo /MDd /W3 /Gm /GX /ZI /Od /D "WIN32"
/D "_DEBUG" /D "_CONSOLE" /D "_MBCS" /YX /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 /pdbtype:sept
# ADD LINK32 ..\db_dblib_dll\bin\tpcc_dblib.lib
..\db_odbc_dll\bin\tpcc_odbc.lib libtux.lib
libbuft.lib libtux2.lib libfml.lib libfml32.lib
libgp.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 /debug
/machine:I386 /pdbtype:sept

!ENDIF

# Begin Target

# Name "tuxapp - Win32 Release"
# Name "tuxapp - Win32 Debug"
# Begin Group "Source"

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

SOURCE=.\src\tuxapp.cpp

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

# ADD CPP /MD

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

# ADD CPP /MDd

!ENDIF

# End Source File
# Begin Source File

SOURCE=.\src\tuxmain.c

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

# ADD CPP /MD

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

# ADD CPP /MDd

!ENDIF

# End Source File
# End Group
# Begin Group "Header"

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

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

tuxapp.h

```
/*        FILE:               TUXAPP.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 Tuxedo
server.
 *
 *  Change history:
 *                  4.20.000 - updated rev number to
match kit
 */

enum TUXERROR
{
          ERR_MISSING_REGISTRY_ENTRIES = 1,
          ERR_BAD_SYNTAX,
          ERR_UNKNOWN_DB_PROTOCOL
};

class CTUXAPP_ERR : public CBaseErr
{
          public:
                    TUXERROR m_Error;

                    CTUXAPP_ERR(TUXERROR Err) {
          m_Error = Err; };
                    ~CTUXAPP_ERR() {};

                    int ErrorType() {return
ERR_TYPE_TUXEDO;};
                    int ErrorNum() {return m_Error;};
                    char *ErrorText();
};

struct TUX_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;
};

static void GetParameters(int argc, char *argv[]);
static void WriteMessageToEventLog(LPTSTR lpszMsg);

#if defined(__cplusplus)
extern "C" {
#endif

void NEWORDER( TPSVCINFO *rqst );
void PAYMENT( TPSVCINFO *rqst );
void DELIVERY( TPSVCINFO *rqst );
void STOCKLEVEL( TPSVCINFO *rqst );
void ORDERSTATUS( TPSVCINFO *rqst );

#if defined(__cplusplus)
}
#endif
```

tuxmain.c

```
/*        FILE:                TUXMAIN.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:  Implementation for TPC-C Tuxedo
server.
 *        Contact:  Charles Levine
(clevine@microsoft.com)
 *
 *  Change history:
 *                  4.20.000 - updated rev number to
match kit
 */
#include <stdio.h>
#include <xa.h>
#include <atmi.h>

#if defined(__cplusplus)
extern "C" {
#endif
extern int _tmrunserver _((int));
extern void DELIVERY _((TPSVCINFO *));
extern void NEWORDER _((TPSVCINFO *));
extern void ORDERSTATUS _((TPSVCINFO *));
extern void PAYMENT _((TPSVCINFO *));
extern void STOCKLEVEL _((TPSVCINFO *));
#if defined(__cplusplus)
}
#endif

static struct tmdsptchtbl_t _tmdsptchtbl[] = {
          { "DELIVERY", "DELIVERY", (void (*)
_((TPSVCINFO *))) DELIVERY, 0, 0 },
          { "NEWORDER", "NEWORDER", (void (*)
_((TPSVCINFO *))) NEWORDER, 1, 0 },
          { "ORDERSTATUS", "ORDERSTATUS", (void (*)
_((TPSVCINFO *))) ORDERSTATUS, 2, 0 },
          { "PAYMENT", "PAYMENT", (void (*)
_((TPSVCINFO *))) PAYMENT, 3, 0 },
          { "STOCKLEVEL", "STOCKLEVEL", (void (*)
_((TPSVCINFO *))) STOCKLEVEL, 4, 0 },
          { NULL, NULL, NULL, 0, 0 }
};

#ifndef _TMDLLIMPORT
#define _TMDLLIMPORT
#endif

_TMDLLIMPORT extern struct xa_switch_t tmnull_switch;

struct tmsvrargs_t tmsvrargs = {
          NULL,
          &_tmdsptchtbl[0],
          0,
          tpsvrinit,
          tpsvrdone,
          _tmrunserver,       /* PRIVATE  */
          NULL,                         /* RESERVED
*/
          NULL,                         /* RESERVED
*/
          NULL,                         /* RESERVED
*/
          NULL                          /* RESERVED
*/
};

struct tmsvrargs_t *
#ifdef _TMPROTOTYPES
_tmgetsvrargs(void)
#else
_tmgetsvrargs()
#endif
{
          tmsvrargs.xa_switch = &tmnull_switch;
          return(&tmsvrargs);
}

int
#ifdef _TMPROTOTYPES
main(int argc, char **argv)
#else
main(argc,argv)
int argc;
char **argv;
#endif
{
#ifdef TMMAINEXIT
#include "mainexit.h"
#endif

          return( _tmstartserver( argc, argv,
_tmgetsvrargs()));
}
```

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         TxnStartT0;
                    // start of txn
                    BYTE      TxnType;
          // one of TXN_REC_TYPE_*
                    BYTE      TxnSubType;
                    // depends on TxnType
          } TXN_RECORD_HEADER, *PTXN_RECORD_HEADER;


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

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


          // TPC-C Txn Record Layout:
          //
    //'TxnStartT0' is a Julian timestamp
corresponding to the moment the
    //txn is sent to the SUT, i.e., beginning of
response time.  Deltas
    //are in milliseconds.  Note that if RTDelay > 0,
then the txn was
    //delayed by this amount.  The delay occurs at
the beginning of the
    //response time.  So if RTDelay > 0, then the txn
was actually sent
    //at TxnStartT0 + RTDelay.
    //
    //Graphically:
    //
```

```
    //  time -->
    //
    //    |--- Menu  ---|-- Keying  --|-- Response --
|--- Think  --|
    //     <- DeltaT1 -> <- DeltaT2 -> <- DeltaT4  ->
<- DeltaT3 ->
    //                                  ^
    //                                  ^ TxnStartT0
    //
    //RTDelay is the amount of response time delay
included in DeltaT4.
    //RTDelay is recorded per txn because this value
can be changed on
    //the fly, and so may vary from txn to txn.
    //
    //TxnStatus is the txn completion code.  It is
used to indicate errors.
    //For example, in the New Order txn, 1% of txns
abort.  TxnStatus will
    //reflect this.

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


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

          // TPC-C Deferred Delivery Txn Record
Layout:
```

```
          //
    //Incorporating delivery transaction information
into the above
          //structure would increase the size of
TXN_DETAILS from 8 to 42 bytes.
    //Hence, we store delivery transaction details in
a separate structure.
    //
          typedef struct _TXN_RECORD_TPCC_DELIV_DEF
          {
                    // common header; must exactly
match TXN_RECORD_HEADER
                    JULIAN_TIME         TxnStartT0;
                    // start of txn
                    BYTE      TxnType;
          // = TXN_REC_TYPE_TPCC_DELIV_DEF
                    BYTE      TxnSubType;
                    // = 0
                    // end of common header

                    int     DeltaT4;              //
response time (ms)
                    int                 DeltaTxnExec;
          // execution time (ms)
                    int                 w_id;
                    // warehouse ID
                    BYTE      TxnStatus;
          // completion status for txn to indicate
errors
                    BYTE      reserved;           //
for word alignment
                    short   o_carrier_id;         //
carrier id
                    long      o_id[10];           //
returned delivery transaction ids
          } 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 SeekTimeT0, BOOL
bSkipCtrlRecs = FALSE);

                    int Sort(void);
                    PTXN_RECORD_HEADER
GetSortedRecord();

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

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

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

                    int ErrorType() {return
ERR_TYPE_TXNLOG;};

                    char *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);
                    };
};
```

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;
};
```

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
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>
{{{
}}}

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

_delivery.h

```
/* Generated by IDL compiler version DEC DCE V2.0.0-6
*/
#ifndef _delivery_v1_0_included
#define _delivery_v1_0_included
#ifndef IDLBASE_H
#include <dce\idlbase.h>
#endif
#include <dce\rpc.h>
#include "trpc/trpc.h"

#ifdef __cplusplus
    extern "C" {
#endif

#ifndef nbase_v0_0_included
#include "dce\nbase.h"
#endif
#ifndef trpcImports_v0_0_included
#include "trpc\trpcImports.h"
#endif
#ifndef mon_handle_v1_0_included
#include "tpm/mon\mon_handle.h"
#endif
#ifndef tpcc_types_v1_0_included
#include "tpcc_type.h"
#endif
#include <dce\rpcexc.h>
extern EXCEPTION encina_x_transaction_aborted;
extern EXCEPTION encina_x_server_shutdown;
extern EXCEPTION encina_x_permission_denied;
extern EXCEPTION encina_x_object_not_found;
extern EXCEPTION encina_x_empty_slot1;
extern EXCEPTION encina_x_empty_slot2;
extern EXCEPTION encina_x_empty_slot3;
extern EXCEPTION encina_x_empty_slot4;
extern EXCEPTION encina_x_empty_slot5;
extern EXCEPTION encina_x_undefined_exception;
extern void  IDL_STD_STDCALL _delivery_GetApplId(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t handle,
    /* [out] */ trpc_byteData_t applString,
    /* [out] */ idl_ulong_int *applStringLength,
    /* [out] */ trpc_byteData_t address,
    /* [out] */ idl_ulong_int *addressLength,
    /* [out] */ error_status_t *c_status,
    /* [out] */ error_status_t *f_status
#endif
);
extern void  IDL_STD_STDCALL _impTPCCDelivery(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [in] */ idl_long_int length,
    /* [in, out] */ idl_char *dataP,
    /* [in, out] */ data_header *headerP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
globalref mon_handle_t handle;
#if defined(__VMS) && (defined(__DECC) ||
defined(__cplusplus))
#pragma extern_model __save
#pragma extern_model __common_block __shr
#endif
typedef struct _delivery_v1_0_epv_t {
void ( IDL_STD_STDCALL *_delivery_GetApplId)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t handle,
    /* [out] */ trpc_byteData_t applString,
    /* [out] */ idl_ulong_int *applStringLength,
    /* [out] */ trpc_byteData_t address,
    /* [out] */ idl_ulong_int *addressLength,
    /* [out] */ error_status_t *c_status,
    /* [out] */ error_status_t *f_status
#endif
);
void ( IDL_STD_STDCALL *_impTPCCDelivery)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [in] */ idl_long_int length,
    /* [in, out] */ idl_char *dataP,
    /* [in, out] */ data_header *headerP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
} _delivery_v1_0_epv_t;
extern rpc_if_handle_t _delivery_v1_0_c_ifspec;
extern rpc_if_handle_t _delivery_v1_0_s_ifspec;
#if defined(__VMS) && (defined(__DECC) ||
defined(__cplusplus))
#pragma extern_model __restore
#endif

#ifdef __cplusplus
    }

#else
#endif
```

```
#endif
```

_neworder.h

```
/* Generated by IDL compiler version DEC DCE V2.0.0-6
*/
#ifndef _neworder_v1_0_included
#define _neworder_v1_0_included
#ifndef IDLBASE_H
#include <dce\idlbase.h>
#endif
#include <dce\rpc.h>
#include "trpc/trpc.h"

#ifdef __cplusplus
    extern "C" {
#endif

#ifndef nbase_v0_0_included
#include "dce\nbase.h"
#endif
#ifndef trpcImports_v0_0_included
#include "trpc\trpcImports.h"
#endif
#ifndef mon_handle_v1_0_included
#include "tpm/mon\mon_handle.h"
#endif
#ifndef tpcc_types_v1_0_included
#include "tpcc_type.h"
#endif
#include <dce\rpcexc.h>
extern EXCEPTION encina_x_transaction_aborted;
extern EXCEPTION encina_x_server_shutdown;
extern EXCEPTION encina_x_permission_denied;
extern EXCEPTION encina_x_object_not_found;
extern EXCEPTION encina_x_empty_slot1;
extern EXCEPTION encina_x_empty_slot2;
extern EXCEPTION encina_x_empty_slot3;
extern EXCEPTION encina_x_empty_slot4;
extern EXCEPTION encina_x_empty_slot5;
extern EXCEPTION encina_x_undefined_exception;
extern void  IDL_STD_STDCALL _neworder_GetApplId(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t handle,
    /* [out] */ trpc_byteData_t applString,
    /* [out] */ idl_ulong_int *applStringLength,
    /* [out] */ trpc_byteData_t address,
    /* [out] */ idl_ulong_int *addressLength,
    /* [out] */ error_status_t *c_status,
    /* [out] */ error_status_t *f_status
#endif
);
extern void  IDL_STD_STDCALL _impTPCCNewOrder(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [in] */ idl_long_int length,
    /* [in, out] */ idl_char *dataP,
    /* [in, out] */ data_header *headerP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
extern void  IDL_STD_STDCALL _impTPCCNOInfo(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [out] */ dbInfo_data_t *dataP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
globalref mon_handle_t handle;
#if defined(__VMS) && (defined(__DECC) ||
defined(__cplusplus))
#pragma extern_model __save
#pragma extern_model __common_block __shr
#endif
typedef struct _neworder_v1_0_epv_t {
void ( IDL_STD_STDCALL *_neworder_GetApplId)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t handle,
    /* [out] */ trpc_byteData_t applString,
    /* [out] */ idl_ulong_int *applStringLength,
    /* [out] */ trpc_byteData_t address,
    /* [out] */ idl_ulong_int *addressLength,
    /* [out] */ error_status_t *c_status,
    /* [out] */ error_status_t *f_status
#endif
);
void ( IDL_STD_STDCALL *_impTPCCNewOrder)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [in] */ idl_long_int length,
    /* [in, out] */ idl_char *dataP,
    /* [in, out] */ data_header *headerP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
void ( IDL_STD_STDCALL *_impTPCCNOInfo)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [out] */ dbInfo_data_t *dataP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
} _neworder_v1_0_epv_t;
extern rpc_if_handle_t _neworder_v1_0_c_ifspec;
extern rpc_if_handle_t _neworder_v1_0_s_ifspec;
#if defined(__VMS) && (defined(__DECC) ||
defined(__cplusplus))
#pragma extern_model __restore
#endif

#ifdef __cplusplus
```

```
    }

#else
#endif
#endif
```

_orderstatus.h

```
/* Generated by IDL compiler version DEC DCE V2.0.0-6
*/
#ifndef _orderstatus_v1_0_included
#define _orderstatus_v1_0_included
#ifndef IDLBASE_H
#include <dce\idlbase.h>
#endif
#include <dce\rpc.h>
#include "trpc/trpc.h"

#ifdef __cplusplus
    extern "C" {
#endif

#ifndef nbase_v0_0_included
#include "dce\nbase.h"
#endif
#ifndef trpcImports_v0_0_included
#include "trpc\trpcImports.h"
#endif
#ifndef mon_handle_v1_0_included
#include "tpm/mon\mon_handle.h"
#endif
#ifndef tpcc_types_v1_0_included
#include "tpcc_type.h"
#endif
#include <dce\rpcexc.h>
extern EXCEPTION encina_x_transaction_aborted;
extern EXCEPTION encina_x_server_shutdown;
extern EXCEPTION encina_x_permission_denied;
extern EXCEPTION encina_x_object_not_found;
extern EXCEPTION encina_x_empty_slot1;
extern EXCEPTION encina_x_empty_slot2;
extern EXCEPTION encina_x_empty_slot3;
extern EXCEPTION encina_x_empty_slot4;
extern EXCEPTION encina_x_empty_slot5;
extern EXCEPTION encina_x_undefined_exception;
extern void  IDL_STD_STDCALL _orderstatus_GetApplId(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t handle,
    /* [out] */ trpc_byteData_t applString,
    /* [out] */ idl_ulong_int *applStringLength,
    /* [out] */ trpc_byteData_t address,
    /* [out] */ idl_ulong_int *addressLength,
    /* [out] */ error_status_t *c_status,
    /* [out] */ error_status_t *f_status
#endif
);
extern void  IDL_STD_STDCALL _impTPCCOrderStatus(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [in] */ idl_long_int length,
    /* [in, out] */ idl_char *dataP,
    /* [in, out] */ data_header *headerP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
globalref mon_handle_t handle;
#if defined(__VMS) && (defined(__DECC) ||
defined(__cplusplus))
#pragma extern_model __save
#pragma extern_model __common_block __shr
#endif
typedef struct _orderstatus_v1_0_epv_t {
void ( IDL_STD_STDCALL *_orderstatus_GetApplId)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t handle,
    /* [out] */ trpc_byteData_t applString,
    /* [out] */ idl_ulong_int *applStringLength,
    /* [out] */ trpc_byteData_t address,
    /* [out] */ idl_ulong_int *addressLength,
    /* [out] */ error_status_t *c_status,
    /* [out] */ error_status_t *f_status
#endif
);
void ( IDL_STD_STDCALL *_impTPCCOrderStatus)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [in] */ idl_long_int length,
    /* [in, out] */ idl_char *dataP,
    /* [in, out] */ data_header *headerP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
} _orderstatus_v1_0_epv_t;
extern rpc_if_handle_t _orderstatus_v1_0_c_ifspec;
extern rpc_if_handle_t _orderstatus_v1_0_s_ifspec;
#if defined(__VMS) && (defined(__DECC) ||
defined(__cplusplus))
#pragma extern_model __restore
#endif

#ifdef __cplusplus
    }

#else
#endif
#endif
```

_payment.h

```
/* Generated by IDL compiler version DEC DCE V2.0.0-6
*/
#ifndef _payment_v1_0_included
#define _payment_v1_0_included
#ifndef IDLBASE_H
#include <dce\idlbase.h>
#endif
#include <dce\rpc.h>
#include "trpc/trpc.h"

#ifdef __cplusplus
    extern "C" {
#endif

#ifndef nbase_v0_0_included
#include "dce\nbase.h"
#endif
#ifndef trpcImports_v0_0_included
#include "trpc\trpcImports.h"
#endif
#ifndef mon_handle_v1_0_included
#include "tpm/mon\mon_handle.h"
#endif
#ifndef tpcc_types_v1_0_included
#include "tpcc_type.h"
#endif
#include <dce\rpcexc.h>
extern EXCEPTION encina_x_transaction_aborted;
extern EXCEPTION encina_x_server_shutdown;
extern EXCEPTION encina_x_permission_denied;
extern EXCEPTION encina_x_object_not_found;
extern EXCEPTION encina_x_empty_slot1;
extern EXCEPTION encina_x_empty_slot2;
extern EXCEPTION encina_x_empty_slot3;
extern EXCEPTION encina_x_empty_slot4;
extern EXCEPTION encina_x_empty_slot5;
extern EXCEPTION encina_x_undefined_exception;
extern void  IDL_STD_STDCALL _payment_GetApplId(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t handle,
    /* [out] */ trpc_byteData_t applString,
    /* [out] */ idl_ulong_int *applStringLength,
    /* [out] */ trpc_byteData_t address,
    /* [out] */ idl_ulong_int *addressLength,
    /* [out] */ error_status_t *c_status,
    /* [out] */ error_status_t *f_status
#endif
);
extern void  IDL_STD_STDCALL _impTPCCPayment(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [in] */ idl_long_int length,
    /* [in, out] */ idl_char *dataP,
    /* [in, out] */ data_header *headerP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
globalref mon_handle_t handle;
#if defined(__VMS) && (defined(__DECC) ||
defined(__cplusplus))
#pragma extern_model __save
#pragma extern_model __common_block __shr
#endif
typedef struct _payment_v1_0_epv_t {
void ( IDL_STD_STDCALL *_payment_GetApplId)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t handle,
    /* [out] */ trpc_byteData_t applString,
    /* [out] */ idl_ulong_int *applStringLength,
    /* [out] */ trpc_byteData_t address,
    /* [out] */ idl_ulong_int *addressLength,
    /* [out] */ error_status_t *c_status,
    /* [out] */ error_status_t *f_status
#endif
);
void ( IDL_STD_STDCALL *_impTPCCPayment)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [in] */ idl_long_int length,
    /* [in, out] */ idl_char *dataP,
    /* [in, out] */ data_header *headerP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
} _payment_v1_0_epv_t;
extern rpc_if_handle_t _payment_v1_0_c_ifspec;
extern rpc_if_handle_t _payment_v1_0_s_ifspec;
#if defined(__VMS) && (defined(__DECC) ||
defined(__cplusplus))
#pragma extern_model __restore
#endif

#ifdef __cplusplus
    }

#else
#endif
#endif
```

_stocklevel.h

```
/* Generated by IDL compiler version DEC DCE V2.0.0-6
*/
#ifndef _stocklevel_v1_0_included
#define _stocklevel_v1_0_included
#ifndef IDLBASE_H
#include <dce\idlbase.h>
#endif
#include <dce\rpc.h>
#include "trpc/trpc.h"

#ifdef __cplusplus
    extern "C" {
#endif

#ifndef nbase_v0_0_included
#include "dce\nbase.h"
#endif
#ifndef trpcImports_v0_0_included
#include "trpc\trpcImports.h"
#endif
#ifndef mon_handle_v1_0_included
#include "tpm/mon\mon_handle.h"
#endif
#ifndef tpcc_types_v1_0_included
#include "tpcc_type.h"
#endif
#include <dce\rpcexc.h>
extern EXCEPTION encina_x_transaction_aborted;
extern EXCEPTION encina_x_server_shutdown;
extern EXCEPTION encina_x_permission_denied;
extern EXCEPTION encina_x_object_not_found;
extern EXCEPTION encina_x_empty_slot1;
extern EXCEPTION encina_x_empty_slot2;
extern EXCEPTION encina_x_empty_slot3;
extern EXCEPTION encina_x_empty_slot4;
extern EXCEPTION encina_x_empty_slot5;
extern EXCEPTION encina_x_undefined_exception;
extern void  IDL_STD_STDCALL _stocklevel_GetApplId(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t handle,
    /* [out] */ trpc_byteData_t applString,
    /* [out] */ idl_ulong_int *applStringLength,
    /* [out] */ trpc_byteData_t address,
    /* [out] */ idl_ulong_int *addressLength,
    /* [out] */ error_status_t *c_status,
    /* [out] */ error_status_t *f_status
#endif
);
extern void  IDL_STD_STDCALL _impTPCCStockLevel(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [in] */ idl_long_int length,
    /* [in, out] */ idl_char *dataP,
    /* [in, out] */ data_header *headerP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
globalref mon_handle_t handle;
#if defined(__VMS) && (defined(__DECC) ||
defined(__cplusplus))
#pragma extern_model __save
#pragma extern_model __common_block __shr
#endif
typedef struct _stocklevel_v1_0_epv_t {
void ( IDL_STD_STDCALL *_stocklevel_GetApplId)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t handle,
    /* [out] */ trpc_byteData_t applString,
    /* [out] */ idl_ulong_int *applStringLength,
    /* [out] */ trpc_byteData_t address,
    /* [out] */ idl_ulong_int *addressLength,
    /* [out] */ error_status_t *c_status,
    /* [out] */ error_status_t *f_status
#endif
);
void ( IDL_STD_STDCALL *_impTPCCStockLevel)(
#ifdef IDL_PROTOTYPES
    /* [in] */ handle_t trpc_h,
    /* [in] */ idl_long_int length,
    /* [in, out] */ idl_char *dataP,
    /* [in, out] */ data_header *headerP,
    /* [in] */ trpc_byteData_t applAndAddress,
    /* [in] */ idl_ulong_int applAndAddressLength,
    /* [in] */ trpc_callbackData_t inCallbackData,
    /* [in] */ idl_ulong_int numOfInCallbackData
#endif
);
} _stocklevel_v1_0_epv_t;
extern rpc_if_handle_t _stocklevel_v1_0_c_ifspec;
extern rpc_if_handle_t _stocklevel_v1_0_s_ifspec;
#if defined(__VMS) && (defined(__DECC) ||
defined(__cplusplus))
#pragma extern_model __restore
#endif

#ifdef __cplusplus
    }

#else
#endif
#endif
```

Appendix B: Database Design

The TPC-C database was created with the following Transact-SQL scripts:

backup.sql

```
--  File:     BACKUP.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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 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. 4.22
--            Copyright Microsoft, 2001
--  Purpose:  Creates tpcc database Backup Devices


use master
go

--  create backup devices


exec sp_addumpdevice 'disk','tpccback1','X:\tpccback1.dmp'
go
exec sp_addumpdevice 'disk','tpccback2','Y:\tpccback2.dmp'
go
exec sp_addumpdevice 'disk','tpccback3','Z:\tpccback3.dmp'
go
```

createdb.sql

```
--  File:     CREATEDB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            Copyright Microsoft, 2001
--  Purpose:  Creates tpcc database and backup files for 5760 warehouses


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_cs_fg
(         NAME                = MSSQL_cs1,
          FILENAME  = "F:",
          SIZE                = 68700MB,
          FILEGROWTH          = 0),
(         NAME                = MSSQL_cs2,
          FILENAME  = "G:",
          SIZE                = 68700MB,
          FILEGROWTH          = 0),
(         NAME                = MSSQL_cs3,
          FILENAME  = "H:",
          SIZE                = 68700MB,
          FILEGROWTH          = 0),
(         NAME                = MSSQL_cs4,
          FILENAME  = "I:",
          SIZE                = 68700MB,
          FILEGROWTH          = 0),
(         NAME                = MSSQL_cs5,
          FILENAME  = "J:",
          SIZE                = 68700MB,
          FILEGROWTH          = 0),


FILEGROUP MSSQL_misc_fg
(         NAME                = MSSQL_misc1,
          FILENAME  = "K:",
          SIZE                = 166500MB,
          FILEGROWTH          = 0)


LOG ON
(         NAME                =MSSQL_tpcc_log,
          FILENAME  ="E:",
          SIZE                =172000MB,
          FILEGROWTH          =0)


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

select "Elapsed time (in seconds): ", datediff(second,(select start_date from
tpcc_timer),(select end_date from tpcc_timer))

--        remove temporary table

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

dbopt1.sql

```
--  File:     DBOPT1.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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
go

use tpcc
go

checkpoint
go
```

dbopt2.sql

```
--  File:     DBOPT2.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            Copyright Microsoft, 2001
--  Purpose:  Resets database options after data load

sp_dboption tpcc,'select into/bulkcopy',FALSE
GO

sp_dboption tpcc,'trunc. log on chkpt.',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 8.0          --
-- 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
```

delivery.sql

```
--  File:     DELIVERY.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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
```

getargs.c

```
//        File:               GETARGS.C
//                                      Microsoft TPC-C Kit Ver. 4.22
//                                      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->pack_size                        =  DEFLDPACKSIZE;
      pargs->starting_warehouse     =  DEF_STARTING_WAREHOUSE;
      pargs->build_index                      =  BUILD_INDEX;
      pargs->index_order                      =  INDEX_ORDER;
      pargs->index_script_path      =  INDEX_SCRIPT_PATH;
      pargs->scale_down                       =  SCALE_DOWN;

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

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

                ptr = argv[i];

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

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

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

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

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

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

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

                case 's':
```

```
                                        pargs->starting_warehouse = atol(ptr+2);
                                        break;

                    case 't':
                                        {
                                                  pargs->tables_all = FALSE;
                                                  if (strcmp(ptr+2,"item") == 0)
                                                            pargs->table_item =
TRUE;
                                                  else if (strcmp(ptr+2,"warehouse")
== 0)
                                                            pargs->table_warehouse =
TRUE;
                                                  else if (strcmp(ptr+2,"customer")
== 0)
                                                            pargs->table_customer =
TRUE;
                                                  else if (strcmp(ptr+2,"orders") ==
0)
                                                            pargs->table_orders =
TRUE;
                                                  else
                                                  {
                                                  printf("\nUnrecognized command");
                                                  GetArgsLoaderUsage();
                                                  exit(1);
                                                  }

                                                  break;
                                        }

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

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

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

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

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

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

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

    /* check for required args */
```

```
    if (pargs->num_warehouses == UNDEF )
    {
                    printf("Number of Warehouses is required\n");
                    exit(-2);
    }

    return;
}


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

void GetArgsLoaderUsage()
{

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


    printf("TPCCLDR:\n\n");
          printf("Parameter                                            Default\n");
          printf("--------------------------------------------------------------
\n");
    printf("-W Number of Warehouses to Load                        Required \n");
    printf("-S Server                                              %s\n", SERVER);
    printf("-U Username                                            %s\n", USER);
    printf("-P Password                                            %s\n", PASSWORD);
    printf("-D Database                                            %s\n", DATABASE);
          printf("-b Batch Size                                          %ld\n",
(long) BATCH);
          printf("-p TDS packet size                                     %ld\n",
(long) DEFLDPACKSIZE);
          printf("-f Loader Results Output Filename                      %s\n",
LOADER_RES_FILE);
          printf("-s Starting Warehouse                                  %ld\n",
(long) DEF_STARTING_WAREHOUSE);
          printf("-i Build Option (data = 0, data and index = 1)         %ld\n",
(long) BUILD_INDEX);
          printf("-o Cluster Index Build Order (before = 1, after = 0)  %ld\n",
(long) INDEX_ORDER);
          printf("-c Build Scaled Database (normal = 0, tiny = 1)        %ld\n",
(long) SCALE_DOWN);
          printf("-d Index Script Path                                   %s\n",
INDEX_SCRIPT_PATH);
          printf("-t Table to Load                                       all tables
\n");
    printf("   [item|warehouse|customer|orders]\n");
    printf("   Notes: \n");
    printf("     - the '-t' parameter may be included multiple times to \n");
    printf("       specify multiple tables to be loaded \n");
    printf("     - 'item' loads ITEM table \n");
    printf("     - 'warehouse' loads WAREHOUSE, DISTRICT, and STOCK tables \n");
    printf("     - 'customer' loads CUSTOMER and HISTORY tables \n");
    printf("     - 'orders' load NEW-ORDER, ORDERS, ORDER-LINE tables \n");

          printf("\nNote:  Command line switches are case sensitive.\n");

    exit(0);
```

```
}
```

idxcuscl.sql

```
--  File:     IDXCUSCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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. 4.22
--            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. 4.22
--            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
```

idxitmcl.sql

```
--  File:     IDXITMCL.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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. 4.22
--            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. 4.22
--            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. 4.22
--            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. 4.22
--            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. 4.22
--            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. 4.22
--            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
```

neword.sql

```
--  File:     NEWORD.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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
```

null-txns.sql

```
-- TPC-C Null Txn Stored Procs
-- Microsoft TPC-C Kit
-- 8/17/99
--
-- This script will create stored procs which accept the same parameters and return
correctly formed
-- results sets to match the standard TPC-C stored procs.  Of course, the advantage
is that these
-- stored procs place almost no load on SQL Server and do not require a database.
--
-- The purpose of these stored procs is to size and test the web client without the
need of a fully
-- scaled database.
--
drop proc tpcc_delivery
drop proc tpcc_neworder
drop proc tpcc_orderstatus
drop proc tpcc_payment
drop proc tpcc_stocklevel
drop proc tpcc_version
drop table order_line_null
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

declare @delaytime varchar(30)

-- uniform random delay of 0 - 1 second; avg = 0.50
select @delaytime = '00:00:0' + cast(cast((rand()*1.00) as decimal(4,3)) as char(5))
waitfor delay @delaytime

select 3001, 3001, 3001, 3001, 3001, 3001, 3001, 3001, 3001, 3001


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),
        @o_entry_d      datetime,
          @li_no          int,
          @o_id               int,
          @commit_flag    tinyint,
        @li_id          int,
        @li_qty         smallint

declare @delaytime varchar(30)

begin
    -- uniform random delay of 0 - 0.6 second; avg = 0.3
    select @delaytime = '00:00:0' + cast(cast((rand()*0.60) as decimal(4,3)) as
char(5))
    waitfor delay @delaytime

    --  process orderlines

          select @commit_flag = 1, @li_no = 0

    while (@li_no < @o_ol_cnt)
          begin

          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


        select @li_no = @li_no + 1
          select @i_price = 23.45, @li_qty = @li_no

          if (@li_id = 999999)
                    begin
                    select '',0,'',0,0
                    select @commit_flag = 0
                    end
          else
                    begin
                    select 'Item Name blah',17,'G', @i_price, @i_price * @li_qty
                    end

          end

--  return order data to client

          select    @w_tax = 0.1234,
                    @d_tax = 0.0987,
                    @o_id = 3001,
                    @c_last = 'BAROUGHTABLE',
                    @c_discount = 0.2198,
                    @c_credit = 'GC',
                    @o_entry_d = getdate()

          select    @w_tax,
                    @d_tax,
                    @o_id,
                    @c_last,
                    @c_discount,
                    @c_credit,
                    @o_entry_d,
                    @commit_flag

end

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,
          @ol_cnt                       smallint

declare @delaytime varchar(30)


    -- uniform random delay of 0 - 0.2 second; avg = 0.1
    select @delaytime = '00:00:0' + cast(cast((rand()*0.20) as decimal(4,3)) as
char(5))
    waitfor delay @delaytime

          select
                 @c_id      = 113,
                 @c_balance = -10.00,
                 @c_first   = '8YCodgytqCj8',
                 @c_middle  = 'OE',
                 @c_last    = 'OUGHTOUGHTABLE',
                 @o_id          = 3456,
                 @o_entry_d = getdate(),
                 @o_carrier_id = 1

          select @ol_cnt = (rand() * 11) + 5
          SET ROWCOUNT @ol_cnt

          select
                    ol_supply_w_id,
                    ol_i_id,
                 ol_quantity,
                 ol_amount,
                 ol_delivery_d
          from order_line_null

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


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

declare @delaytime varchar(30)

    -- uniform random delay of 0 - 0.3 second; avg = 0.15
    select @delaytime = '00:00:0' + cast(cast((rand()*0.30) as decimal(4,3)) as
char(5))
    waitfor delay @delaytime

    select @screen_data = ''


--  get customer info and update balances

          select
                    @d_street_1 = 'rqSHHakqyV',
                    @d_street_2 = 'zZ98nW3BR2s',
                    @d_city     = 'ArNr4GNFV9',
                    @d_state    = 'aV',
                    @d_zip      = '453511111'

--  get warehouse data and update year-to-date

          select
                    @w_street_1 = 'rqSHHakqyV',
                    @w_street_2 = 'zZ98nW3BR2s',
                    @w_city     = 'ArNr4GNFV9',
                    @w_state    = 'aV',
                    @w_zip      = '453511111'
```

```
          select
                    @c_id             = 123,
                    @c_balance      = -10000.00,
                    @c_first        = 'KmR03Xureb',
                    @c_middle       = 'OE',
                    @c_last         = 'BAROUGHTBAR',
                    @c_street_1     = 'QpGdOHjv8mR9vNI8V',
                    @c_street_2     = 'dzKoCObBqbC3yu',
                    @c_city         = 'zAKZXdC037FQxq',
                    @c_state        = 'QA',
                    @c_zip          = '700311111',
                    @c_phone        = '2967264064528555',
                    @c_credit       = 'GC',
                    @c_credit_lim   = 50000.00,
                    @c_discount     = 0.3069,
                    @c_since        = getdate(),
                    @datetime       = getdate()



--  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

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

declare @delaytime varchar(30)
```

```
    -- uniform random delay of 0 - 3.6 second; avg = 1.8
    select @delaytime = '00:00:0' + cast(cast((rand()*3.60) as decimal(4,3)) as
char(5))
    waitfor delay @delaytime

    select 49

GO

create proc tpcc_version
as
declare @version    char(8)

begin
          select @version = '4.10.000'
          select @version as 'Version'
end

GO

CREATE TABLE order_line_null (
          [ol_i_id] [int] NOT NULL ,
          [ol_supply_w_id] [smallint] NOT NULL ,
          [ol_delivery_d] [datetime] NOT NULL ,
          [ol_quantity] [smallint] NOT NULL ,
          [ol_amount] [numeric](6, 2) NOT NULL
) ON [PRIMARY]
GO

insert into order_line_null values ( 101, 1, getdate(), 1, 123.45 )
insert into order_line_null values ( 102, 1, getdate(), 2, 123.45 )
insert into order_line_null values ( 103, 1, getdate(), 3, 123.45 )
insert into order_line_null values ( 104, 1, getdate(), 4, 123.45 )
insert into order_line_null values ( 105, 1, getdate(), 5, 123.45 )
insert into order_line_null values ( 106, 1, getdate(), 1, 123.45 )
insert into order_line_null values ( 107, 1, getdate(), 2, 123.45 )
insert into order_line_null values ( 108, 1, getdate(), 3, 123.45 )
insert into order_line_null values ( 109, 1, getdate(), 4, 123.45 )
insert into order_line_null values ( 110, 1, getdate(), 5, 123.45 )
insert into order_line_null values ( 111, 1, getdate(), 1, 123.45 )
insert into order_line_null values ( 112, 1, getdate(), 2, 123.45 )
insert into order_line_null values ( 113, 1, getdate(), 3, 123.45 )
insert into order_line_null values ( 114, 1, getdate(), 4, 123.45 )
insert into order_line_null values ( 115, 1, getdate(), 5, 123.45 )

GO
```

ordstat.sql

```
--  File:     ORDSTAT.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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. 4.22
--            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
```

random.c

```
//        File:               RANDOM.C
//                                      Microsoft TPC-C Kit Ver. 4.22
//                                      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;
}
```

removedb.sql

```
--  File:     REMOVEDB.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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 'tpccback4'
exec sp_dropdevice 'tpccback5'
exec sp_dropdevice 'tpccback6'
go
```

restore.sql

```
--  File:     RESTORE.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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 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

sp_dboption tpcc,'torn page detection','false'
go
```

RunSQLCfg.sql

```
/*  TPC-C Benchmark Kit                                                       */
/*                                                                            */
/*  RUNSQLCFG.SQL                                                             */
/*                                                                            */
/*  This script file is used to set runtime server configuration parameters   */
/*                                                                            */


exec sp_configure "show advanced option", 1
go

reconfigure with override
go

/* change this value to approximately the number of connected users */
exec sp_configure "max worker threads",255

/* increase priority of user threads */
exec sp_configure "priority boost",1

/* disable automatic checkpointing */
exec sp_configure "recovery interval",32767

/* change to a mask appropriate for the number of processors on the server */
exec sp_configure "affinity mask",0xf

/* enable fibers */
exec sp_configure "lightweight pooling",1

go

reconfigure with override
go
```

sqlshutdown.sql

```
use tpcc
go
checkpoint
go
shutdown
go
```

stocklev.sql

```
--  File:     STOCKLEV.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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
```

strings.c

```
//        File:               STRINGS.C
//                                      Microsoft TPC-C Kit Ver. 4.22
//                                      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;
}
```

tables.sql

```
--  File:     TABLES.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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
```

time.c

```
//        File:               TIME.C
//                                      Microsoft TPC-C Kit Ver. 4.22
//                                      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. 4.22
//                                      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  "4.22"

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

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

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

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

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

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

// String length constants
          #define SERVER_NAME_LEN            20
          #define DATABASE_NAME_LEN          20
          #define USER_NAME_LEN              20
          #define PASSWORD_LEN               20
          #define TABLE_NAME_LEN             20
          #define I_DATA_LEN                 50
          #define I_NAME_LEN                 24
          #define BRAND_LEN                   1
          #define LAST_NAME_LEN              16
          #define W_NAME_LEN                 10
          #define ADDRESS_LEN                20
          #define STATE_LEN                   2
          #define ZIP_LEN                     9
          #define S_DIST_LEN                 24
          #define S_DATA_LEN                 50
          #define D_NAME_LEN                 10
          #define FIRST_NAME_LEN             16
          #define MIDDLE_NAME_LEN             2
          #define PHONE_LEN                  16
          #define CREDIT_LEN                  2
          #define C_DATA_LEN                500
          #define H_DATA_LEN                 24
          #define DIST_INFO_LEN              24
          #define MAX_OL_NEW_ORDER_ITEMS     15
          #define MAX_OL_ORDER_STATUS_ITEMS  15
          #define STATUS_LEN                 25
          #define OL_DIST_INFO_LEN                   24
          #define C_SINCE_LEN                                  23
          #define H_DATE_LEN                                   23
          #define OL_DELIVERY_D_LEN                  23
          #define O_ENTRY_D_LEN              23


// Functions in random.c
void      seed();
long      irand();
double    drand();
void      WUCreate();
short     WURand();
long      RandomNumber(long lower, long upper);

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

// Functions in time.c
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. 4.22
//                                      Copyright Microsoft, 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 CheckSQL();
void CheckDataBase();

long NURand();
void LoadItem();
void LoadWarehouse();

void Stock();
void District();

void LoadCustomer();
void CustomerBufInit();
void CustomerBufLoad();
void LoadCustomerTable();
void LoadHistoryTable();

void LoadOrders();
void OrdersBufInit();
void OrdersBufLoad();
void LoadOrdersTable();
void LoadNewOrderTable();
void LoadOrderLineTable();
void GetPermutation();
void CheckForCommit();
void OpenConnections();
void BuildIndex();
void FormatDate ();

// Shared memory structures
```

```
typedef struct
{
    long                ol;
    long                ol_i_id;
    short               ol_supply_w_id;
    short               ol_quantity;
    double              ol_amount;
    char                ol_dist_info[DIST_INFO_LEN+1];
          char
          ol_delivery_d[OL_DELIVERY_D_LEN+1];
} ORDER_LINE_STRUCT;

typedef struct
{
    long                o_id;
    short               o_d_id;
    short               o_w_id;
    long                o_c_id;
    short               o_carrier_id;
    short               o_ol_cnt;
    short               o_all_local;
          ORDER_LINE_STRUCT   o_ol[15];
} ORDERS_STRUCT;

typedef struct
{
    long                                c_id;
    short                               c_d_id;
    short                               c_w_id;
          char                                    c_first[FIRST_NAME_LEN+1];
    char                                c_middle[MIDDLE_NAME_LEN+1];
    char                                c_last[LAST_NAME_LEN+1];
    char                                c_street_1[ADDRESS_LEN+1];
    char                                c_street_2[ADDRESS_LEN+1];
    char                                c_city[ADDRESS_LEN+1];
    char                                c_state[STATE_LEN+1];
    char                                c_zip[ZIP_LEN+1];
    char                                c_phone[PHONE_LEN+1];
    char                                c_credit[CREDIT_LEN+1];
    double                                        c_credit_lim;
    double                                        c_discount;
//  fix to avoid ODBC float to numeric conversion problem.
//  double                                        c_balance;
          char                                    c_balance[6];

    double                                        c_ytd_payment;
          short                                   c_payment_cnt;
          short                                   c_delivery_cnt;
          char                                    c_data[C_DATA_LEN+1];
          double                                  h_amount;
    char                                h_data[H_DATA_LEN+1];
} CUSTOMER_STRUCT;

typedef struct
{
          char                                    c_last[LAST_NAME_LEN+1];
          char                                    c_first[FIRST_NAME_LEN+1];
    long                                c_id;
} CUSTOMER_SORT_STRUCT;

typedef struct
{
```

```
    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

      CheckSQL();
      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];

          // Seed with unique number
          seed(1);

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

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

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

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

          rc = bcp_init(i_hdbc1, name, NULL, "logs\\item.err", DB_IN);
          if (rc != SUCCEED)
                    HandleErrorDBC(i_hdbc1);

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

          rc = bcp_bind(i_hdbc1, (BYTE *) &i_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
          if (rc != SUCCEED)
                    HandleErrorDBC(i_hdbc1);
          rc = bcp_bind(i_hdbc1, (BYTE *) &i_im_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 2);
          if (rc != SUCCEED)
                    HandleErrorDBC(i_hdbc1);

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

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

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

          time_start = (TimeNow() / MILLI);

          item_rows_loaded = 0;

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

                    MakeAlphaString(14, 24, I_NAME_LEN, i_name);

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

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

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

                    item_rows_loaded++;
                    CheckForCommit(i_hdbc1, i_hstmt1, item_rows_loaded, "item",
&time_start);
          }

          rcint = bcp_done(i_hdbc1);
          if (rcint < 0)
                    HandleErrorDBC(i_hdbc1);

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

          SQLFreeStmt(i_hstmt1, SQL_DROP);
          SQLDisconnect(i_hdbc1);
          SQLFreeConnect(i_hdbc1);

          // if build index after load
          if ((aptr->build_index == 1) && (aptr->index_order == 0))
                    BuildIndex("idxitmcl");

}


//=======================================================================
//
// Function    : LoadWarehouse
//
// Loads WAREHOUSE table and loads Stock and District as Warehouses are created
//
//=======================================================================

void LoadWarehouse()
{
    short w_id;
    char  w_name[W_NAME_LEN+1];
    char  w_street_1[ADDRESS_LEN+1];
    char  w_street_2[ADDRESS_LEN+1];
    char  w_city[ADDRESS_LEN+1];
    char  w_state[STATE_LEN+1];
    char  w_zip[ZIP_LEN+1];
    double          w_tax;
    double          w_ytd;
          char      name[20];
          long      time_start;
          RETCODE   rc;
          DBINT     rcint;
          char      bcphint[128];


          // Seed with unique number
          seed(2);

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

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

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

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

          rc = bcp_init(w_hdbc1, name, NULL, "logs\\whouse.err", DB_IN);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

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

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

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

          rc = bcp_bind(w_hdbc1, (BYTE *) w_street_1, 0, ADDRESS_LEN, NULL, 0, 0,
3);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);
          rc = bcp_bind(w_hdbc1, (BYTE *) w_street_2, 0, ADDRESS_LEN, NULL, 0, 0,
4);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

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

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

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

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

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

          time_start = (TimeNow() / MILLI);

          warehouse_rows_loaded = 0;

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

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

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

                    w_ytd = 300000.00;

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

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

          rcint = bcp_done(w_hdbc1);
          if (rcint < 0)
                    HandleErrorDBC(w_hdbc1);

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

          // if build index after load...
          if ((aptr->build_index == 1) && (aptr->index_order == 0))
                    BuildIndex("idxwarcl");

          stock_rows_loaded = 0;
          district_rows_loaded = 0;
          District();
          Stock();

}


//=======================================================================
//
// Function   : District
//
//=======================================================================

void District()
{
    short d_id;
    short d_w_id;
    char  d_name[D_NAME_LEN+1];
    char  d_street_1[ADDRESS_LEN+1];
    char  d_street_2[ADDRESS_LEN+1];
    char  d_city[ADDRESS_LEN+1];
    char  d_state[STATE_LEN+1];
    char  d_zip[ZIP_LEN+1];
    double          d_tax;
    double          d_ytd;
          char      name[20];
    long  d_next_o_id;
          long      time_start;
          int                 w_id;
          RETCODE   rc;
          DBINT     rcint;
          char      bcphint[128];

          // Seed with unique number
          seed(4);

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

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

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

          rc = bcp_init(w_hdbc1, name, NULL, "logs\\district.err", DB_IN);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

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

          rc = bcp_bind(w_hdbc1, (BYTE *) &d_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 1);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);
          rc = bcp_bind(w_hdbc1, (BYTE *) &d_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 2);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

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

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

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

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

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

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

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

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

          rc = bcp_bind(w_hdbc1, (BYTE *) &d_next_o_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 11);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          d_ytd  = 30000.0;

          d_next_o_id = orders_per_district+1;

          time_start = (TimeNow() / MILLI);

          for (w_id = aptr->starting_warehouse; w_id <= aptr->num_warehouses;
w_id++)
          {
                    d_w_id = w_id;

                    for (d_id = 1; d_id <= DISTRICT_PER_WAREHOUSE; d_id++)
                    {
                              MakeAlphaString(6,10,D_NAME_LEN, d_name);
```

```
                              MakeAddress(d_street_1, d_street_2, d_city, d_state,
d_zip);

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

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

                              district_rows_loaded++;
                              CheckForCommit(w_hdbc1, w_hstmt1,
district_rows_loaded, "district", &time_start);
                    }
    }

          rcint = bcp_done(w_hdbc1);
          if (rcint < 0)
                    HandleErrorDBC(w_hdbc1);

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

          // if build index after load...
          if ((aptr->build_index == 1) && (aptr->index_order == 0))
                    BuildIndex("idxdiscl");

    return;
}


//=======================================================================
//
// Function   : Stock
//
//=======================================================================

void Stock()
{
    long  s_i_id;
    short s_w_id;
    short s_quantity;
    char  s_dist_01[S_DIST_LEN+1];
    char  s_dist_02[S_DIST_LEN+1];
    char  s_dist_03[S_DIST_LEN+1];
    char  s_dist_04[S_DIST_LEN+1];
    char  s_dist_05[S_DIST_LEN+1];
    char  s_dist_06[S_DIST_LEN+1];
    char  s_dist_07[S_DIST_LEN+1];
    char  s_dist_08[S_DIST_LEN+1];
    char  s_dist_09[S_DIST_LEN+1];
    char  s_dist_10[S_DIST_LEN+1];
    long  s_ytd;
    short s_order_cnt;
    short s_remote_cnt;
    char  s_data[S_DATA_LEN+1];
    short len;
          char      name[20];
          long      time_start;
          RETCODE   rc;
          DBINT     rcint;
          char      bcphint[128];

          // Seed with unique number
          seed(3);
          // if build index before load...
          if ((aptr->build_index == 1) && (aptr->index_order == 1))
                    BuildIndex("idxstkcl");

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

          rc = bcp_init(w_hdbc1, name, NULL, "logs\\stock.err", DB_IN);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          if ((aptr->build_index == 1) && (aptr->index_order == 1))
          {
                    sprintf(bcphint, "tablock, order (s_i_id, s_w_id),
ROWS_PER_BATCH = %u", (aptr->num_warehouses * 100000));
                    rc = bcp_control(w_hdbc1, BCPHINTS, (void*) bcphint);
                    if (rc != SUCCEED)
                              HandleErrorDBC(w_hdbc1);
          }

          rc = bcp_bind(w_hdbc1, (BYTE *) &s_i_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 1);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

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

          rc = bcp_bind(w_hdbc1, (BYTE *) &s_quantity, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_01, 0, S_DIST_LEN, NULL, 0, 0, 4);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_02, 0, S_DIST_LEN, NULL, 0, 0, 5);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_03, 0, S_DIST_LEN, NULL, 0, 0, 6);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_04, 0, S_DIST_LEN, NULL, 0, 0, 7);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_05, 0, S_DIST_LEN, NULL, 0, 0, 8);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_06, 0, S_DIST_LEN, NULL, 0, 0, 9);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_07, 0, S_DIST_LEN, NULL, 0, 0, 10);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);
```

```
          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_08, 0, S_DIST_LEN, NULL, 0, 0, 11);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_09, 0, S_DIST_LEN, NULL, 0, 0, 12);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) s_dist_10, 0, S_DIST_LEN, NULL, 0, 0, 13);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) &s_ytd, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT4, 14);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) &s_order_cnt, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 15);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) &s_remote_cnt, 0, SQL_VARLEN_DATA, NULL,
0, SQLINT2, 16);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          rc = bcp_bind(w_hdbc1, (BYTE *) s_data, 0, S_DATA_LEN, NULL, 0, 0, 17);
          if (rc != SUCCEED)
                    HandleErrorDBC(w_hdbc1);

          s_ytd = s_order_cnt = s_remote_cnt = 0;

          time_start = (TimeNow() / MILLI);

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

          for (s_i_id=1; s_i_id <= max_items; s_i_id++)
          {

                    for (s_w_id = (short)aptr->starting_warehouse; s_w_id <= aptr-
>num_warehouses; s_w_id++)
                    {

                              s_quantity = (short)RandomNumber(10L,100L);
                              len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_01);
                              len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_02);
                              len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_03);
                              len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_04);
                              len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_05);
                              len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_06);
                              len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_07);
                              len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_08);
                              len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_09);
                              len = MakeAlphaString(24,24,S_DIST_LEN, s_dist_10);

                              len = MakeOriginalAlphaString(26,50, S_DATA_LEN,
s_data,10);

                              rc = bcp_sendrow(w_hdbc1);
                              if (rc != SUCCEED)
                                        HandleErrorDBC(w_hdbc1);
                              stock_rows_loaded++;
                              CheckForCommit(w_hdbc1, w_hstmt1, stock_rows_loaded,
"stock", &time_start);

                    }
          }

          rcint = bcp_done(w_hdbc1);
          if (rcint < 0)
                    HandleErrorDBC(w_hdbc1);

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

          SQLFreeStmt(w_hstmt1, SQL_DROP);
          SQLDisconnect(w_hdbc1);
          SQLFreeConnect(w_hdbc1);

          // if build index after load...
          if ((aptr->build_index == 1) && (aptr->index_order == 0))
                    BuildIndex("idxstkcl");

          return;
}


//=======================================================================
//
// Function   : LoadCustomer
//
//=======================================================================

void LoadCustomer()
{
          LOADER_TIME_STRUCT      customer_time_start;
          LOADER_TIME_STRUCT      history_time_start;
          short                         w_id;
    short                     d_id;
          DWORD                         dwThreadID[MAX_CUSTOMER_THREADS];
          HANDLE                        hThread[MAX_CUSTOMER_THREADS];
          char                          name[20];
          RETCODE                                           rc;
          DBINT                                             rcint;
          char                                              bcphint[128];
          char                                              cmd[256];
          // SQLRETURN                                      rc_1;
          // SQLSMALLINT                                    recnum, MsgLen;
          // SQLCHAR                                                  SqlState[6],
Msg[SQL_MAX_MESSAGE_LENGTH];
          // SQLINTEGER                                     NativeError;

          // Seed with unique number
          seed(5);

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

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

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

          rc = bcp_init(c_hdbc1, name, NULL, "logs\\customer.err", DB_IN);
```

```
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

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

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

          rc = bcp_init(c_hdbc2, name, NULL, "logs\\history.err", DB_IN);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc2);

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

          customer_rows_loaded    = 0;
          history_rows_loaded     = 0;

          CustomerBufInit();

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

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

                              CustomerBufLoad(d_id, w_id);

                              // Start parallel loading threads here...

                              // Start customer table thread

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

                              hThread[0] = CreateThread(NULL,

            0,

            (LPTHREAD_START_ROUTINE) LoadCustomerTable,

            &customer_time_start,

            0,

            &dwThreadID[0]);

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

                              // Start History table thread

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

                              hThread[1] = CreateThread(NULL,

            0,

            (LPTHREAD_START_ROUTINE) LoadHistoryTable,

            &history_time_start,

            0,

            &dwThreadID[1]);

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

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

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

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


                    }

          }

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

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

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

          // if build index after load...
          if ((aptr->build_index == 1) && (aptr->index_order == 0))
                    BuildIndex("idxcuscl");

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

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

          system(cmd);

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

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


    return;

}


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

void CustomerBufInit()
{
          int     i;

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

                    strcpy(customer_buf[i].c_first,"");
                    strcpy(customer_buf[i].c_middle,"");
                    strcpy(customer_buf[i].c_last,"");
                    strcpy(customer_buf[i].c_street_1,"");
                    strcpy(customer_buf[i].c_street_2,"");
                    strcpy(customer_buf[i].c_city,"");
                    strcpy(customer_buf[i].c_state,"");
                    strcpy(customer_buf[i].c_zip,"");
                    strcpy(customer_buf[i].c_phone,"");
                    strcpy(customer_buf[i].c_credit,"");

                    customer_buf[i].c_credit_lim = 0;
                    customer_buf[i].c_discount = (float) 0;

                    //  fix to avoid ODBC float to numeric conversion problem.
                    //        customer_buf[i].c_balance = 0;
                    strcpy(customer_buf[i].c_balance,"");
                    customer_buf[i].c_ytd_payment = 0;
                    customer_buf[i].c_payment_cnt = 0;
                    customer_buf[i].c_delivery_cnt = 0;

                    strcpy(customer_buf[i].c_data,"");

                    customer_buf[i].h_amount = 0;

                    strcpy(customer_buf[i].h_data,"");

          }


}


//=======================================================================
//
// Function   : CustomerBufLoad
//
// Fills shared buffer for HISTORY and CUSTOMER
//=======================================================================

void CustomerBufLoad(int d_id, int w_id)
{
          long                                    i;
    CUSTOMER_SORT_STRUCT    c[CUSTOMERS_PER_DISTRICT];


          for (i=0;i<customers_per_district;i++)
          {
                    if (i < 1000)
                              LastName(i, c[i].c_last);
                    else
                              LastName(NURand(255,0,999,LOADER_NURAND_C),
c[i].c_last);

                    MakeAlphaString(8,16,FIRST_NAME_LEN, c[i].c_first);

                    c[i].c_id = i+1;

          }

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

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

                    customer_buf[i].c_d_id = d_id;
                    customer_buf[i].c_w_id = w_id;
                    customer_buf[i].h_amount = 10.0;

                    customer_buf[i].c_ytd_payment  = 10.0;

                    customer_buf[i].c_payment_cnt  = 1;
                    customer_buf[i].c_delivery_cnt = 0;

                    // Generate CUSTOMER and HISTORY data

                    customer_buf[i].c_id = c[i].c_id;

                    strcpy(customer_buf[i].c_first, c[i].c_first);
```

```
                    strcpy(customer_buf[i].c_last, c[i].c_last);

                    customer_buf[i].c_middle[0] = 'O';
                    customer_buf[i].c_middle[1] = 'E';

                    MakeAddress(customer_buf[i].c_street_1,
                                            customer_buf[i].c_street_2,
                                            customer_buf[i].c_city,
                                            customer_buf[i].c_state,
                                            customer_buf[i].c_zip);

                    MakeNumberString(16, 16, PHONE_LEN, customer_buf[i].c_phone);

                    if (RandomNumber(1L, 100L) > 10)
                              customer_buf[i].c_credit[0] = 'G';
                    else
                              customer_buf[i].c_credit[0] = 'B';
                    customer_buf[i].c_credit[1] = 'C';

                    customer_buf[i].c_credit_lim = 50000.0;
                    customer_buf[i].c_discount = ((float) RandomNumber(0L, 5000L)) /
10000.0;

                    //  fix to avoid ODBC float to numeric conversion problem.

                    //  customer_buf[i].c_balance = -10.0;
                    strcpy(customer_buf[i].c_balance,"-10.0");

                    MakeAlphaString(300, 500, C_DATA_LEN, customer_buf[i].c_data);


                    // Generate HISTORY data
                    MakeAlphaString(12, 24, H_DATA_LEN, customer_buf[i].h_data);

          }
}

//=======================================================================
//
// Function   : LoadCustomerTable
//
//=======================================================================

void LoadCustomerTable(LOADER_TIME_STRUCT *customer_time_start)
{
          int         i;
    long        c_id;
    short       c_d_id;
    short       c_w_id;
    char        c_first[FIRST_NAME_LEN+1];
    char        c_middle[MIDDLE_NAME_LEN+1];
    char        c_last[LAST_NAME_LEN+1];
    char        c_street_1[ADDRESS_LEN+1];
    char        c_street_2[ADDRESS_LEN+1];
    char        c_city[ADDRESS_LEN+1];
    char        c_state[STATE_LEN+1];
    char        c_zip[ZIP_LEN+1];
    char        c_phone[PHONE_LEN+1];
    char        c_credit[CREDIT_LEN+1];
    double      c_credit_lim;
    double      c_discount;

          //  fix to avoid ODBC float to numeric conversion problem.
          //  double                    c_balance;
          char                c_balance[6];

    double      c_ytd_payment;
    short       c_payment_cnt;
    short       c_delivery_cnt;
    char        c_data[C_DATA_LEN+1];
          char                c_since[C_SINCE_LEN+1];
          RETCODE             rc;

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, 1);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
2);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

          rc = bcp_bind(c_hdbc1, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 3);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_first, 0, FIRST_NAME_LEN, NULL, 0, 0, 4);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_middle, 0, MIDDLE_NAME_LEN,NULL, 0, 0, 5);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_last, 0, LAST_NAME_LEN, NULL, 0, 0, 6);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_street_1, 0, ADDRESS_LEN, NULL, 0, 0, 7);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_street_2, 0, ADDRESS_LEN, NULL,0,0, 8);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_city, 0, ADDRESS_LEN, NULL, 0, 0, 9);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_state, 0, STATE_LEN, NULL, 0, 0, 10);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_zip, 0, ZIP_LEN, NULL, 0, 0, 11);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_phone, 0, PHONE_LEN, NULL, 0, 0, 12);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

          rc = bcp_bind(c_hdbc1, (BYTE *) &c_since, 0, C_SINCE_LEN, NULL, 0,
SQLCHARACTER, 13);
          if (rc != SUCCEED)
```

```
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_credit, 0, CREDIT_LEN, NULL, 0, 0, 14);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_credit_lim, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 15);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_discount, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 16);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);


          //  fix to avoid ODBC float to numeric conversion problem.

    //  rc = bcp_bind(c_hdbc1, (BYTE *) &c_balance, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 17);
          //  if (rc != SUCCEED)
          //        HandleErrorDBC(c_hdbc1);
    rc = bcp_bind(c_hdbc1, (BYTE *) c_balance, 0, 5, NULL, 0, SQLCHARACTER, 17);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);


    rc = bcp_bind(c_hdbc1, (BYTE *) &c_ytd_payment, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 18);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_payment_cnt, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 19);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) &c_delivery_cnt,0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 20);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

    rc = bcp_bind(c_hdbc1, (BYTE *) c_data, 0, 500, NULL, 0, 0, 21);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc1);

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

                    strcpy(c_first, customer_buf[i].c_first);
                    strcpy(c_middle, customer_buf[i].c_middle);
                    strcpy(c_last, customer_buf[i].c_last);
                    strcpy(c_street_1, customer_buf[i].c_street_1);
                    strcpy(c_street_2, customer_buf[i].c_street_2);
                    strcpy(c_city, customer_buf[i].c_city);
                    strcpy(c_state, customer_buf[i].c_state);
                    strcpy(c_zip, customer_buf[i].c_zip);
                    strcpy(c_phone, customer_buf[i].c_phone);
                    strcpy(c_credit, customer_buf[i].c_credit);
                    FormatDate(&c_since);


                    c_credit_lim = customer_buf[i].c_credit_lim;
                    c_discount = customer_buf[i].c_discount;

                    //  fix to avoid ODBC float to numeric conversion problem.

                    //  c_balance = customer_buf[i].c_balance;
                    strcpy(c_balance, customer_buf[i].c_balance);

                    c_ytd_payment = customer_buf[i].c_ytd_payment;
                    c_payment_cnt = customer_buf[i].c_payment_cnt;
                    c_delivery_cnt = customer_buf[i].c_delivery_cnt;

                    strcpy(c_data, customer_buf[i].c_data);

                    // Send data to server
                    rc = bcp_sendrow(c_hdbc1);
                    if (rc != SUCCEED)
                              HandleErrorDBC(c_hdbc1);

                    customer_rows_loaded++;
                    CheckForCommit(c_hdbc1, c_hstmt1, customer_rows_loaded,
"customer", &customer_time_start->time_start);
    }

}


//=======================================================================
//
// Function   : LoadHistoryTable
//
//=======================================================================

void LoadHistoryTable(LOADER_TIME_STRUCT *history_time_start)
{
          int         i;
    long        c_id;
    short       c_d_id;
    short       c_w_id;
          double    h_amount;
    char        h_data[H_DATA_LEN+1];
          char              h_date[H_DATE_LEN+1];
          RETCODE           rc;

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, 1);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
2);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
3);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc2);
```

```
    rc = bcp_bind(c_hdbc2, (BYTE *) &c_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
4);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &c_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
5);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc2);

          rc = bcp_bind(c_hdbc2, (BYTE *) &h_date, 0, H_DATE_LEN, NULL, 0,
SQLCHARACTER, 6);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) &h_amount, 0, SQL_VARLEN_DATA, NULL, 0, SQLFLT8,
7);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc2);

    rc = bcp_bind(c_hdbc2, (BYTE *) h_data, 0, H_DATA_LEN, NULL, 0, 0, 8);
          if (rc != SUCCEED)
                    HandleErrorDBC(c_hdbc2);

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

                    FormatDate(&h_date);

                    // send to server
                    rc = bcp_sendrow(c_hdbc2);
                    if (rc != SUCCEED)
                              HandleErrorDBC(c_hdbc2);

                    history_rows_loaded++;
                    CheckForCommit(c_hdbc2, c_hstmt2, history_rows_loaded,
"history", &history_time_start->time_start);
    }

}


//============================================================-===============
//
// Function   : LoadOrders
//
//============================================================================

void LoadOrders()
{
          LOADER_TIME_STRUCT      orders_time_start;
          LOADER_TIME_STRUCT      new_order_time_start;
          LOADER_TIME_STRUCT      order_line_time_start;
          short                             w_id;
    short                         d_id;
          DWORD                             dwThreadID[MAX_ORDER_THREADS];
          HANDLE                            hThread[MAX_ORDER_THREADS];
          char                              name[20];
```

```
	RETCODE						rc;
	char						bcphint[128];

	// seed with unique number
	seed(6);

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

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

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

	rc = bcp_init(o_hdbc1, name, NULL, "logs\\orders.err", DB_IN);
	if (rc != SUCCEED)
		HandleErrorDBC(o_hdbc1);

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

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

	rc = bcp_init(o_hdbc2, name, NULL, "logs\\neword.err", DB_IN);
	if (rc != SUCCEED)
		HandleErrorDBC(o_hdbc2);

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

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

	rc = bcp_init(o_hdbc3, name, NULL, "logs\\ordline.err", DB_IN);
	if (rc != SUCCEED)
		HandleErrorDBC(o_hdbc3);

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

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

	OrdersBufInit();

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

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

			OrdersBufLoad(d_id, w_id);

			// start parallel loading threads here...

			// start Orders table thread

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

			hThread[0] = CreateThread(NULL,

  0,

  (LPTHREAD_START_ROUTINE) LoadOrdersTable,

  &orders_time_start,

  0,

  &dwThreadID[0]);

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

			// start NewOrder table thread

			printf("...Loading New-Order Table for: d_id = %d,
w_id = %d\n", d_id, w_id);

			hThread[1] = CreateThread(NULL,

  0,

  (LPTHREAD_START_ROUTINE) LoadNewOrderTable,

  &new_order_time_start,

  0,

  &dwThreadID[1]);

			if (hThread[1] == NULL)
			{
```

```
                                        printf("Error, failed in creating creating 
thread = 1.\n");
                                        exit(-1);
                              }

                              // start Order-Line table thread

                              printf("...Loading Order-Line Table for: d_id = %d, 
w_id = %d\n", d_id, w_id);

                              hThread[2] = CreateThread(NULL,

            0,

            (LPTHREAD_START_ROUTINE) LoadOrderLineTable,

            &order_line_time_start,

            0,

            &dwThreadID[2]);

                              if (hThread[2] == NULL)
                              {
                                        printf("Error, failed in creating creating 
thread = 2.\n");
                                        exit(-1);
                              }

                              WaitForSingleObject( hThread[0], INFINITE );
                              WaitForSingleObject( hThread[1], INFINITE );
                              WaitForSingleObject( hThread[2], INFINITE );

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

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

                              if (CloseHandle(hThread[2]) == FALSE)
                              {
                                        printf("Error, failed in closing OrderLine 
thread handle with errno: %d\n", GetLastError());
                              }

                    }
          }

          printf("Finished loading orders.\n");


    return;
}

//=======================================================================
//
```

```
// Function   : OrdersBufInit
//
// Clears shared buffer for ORDERS, NEWORDER, and ORDERLINE
//
//=======================================================================

void OrdersBufInit()
{
          int     i;
          int                 j;

          for (i=0;i<orders_per_district;i++)
          {
                    orders_buf[i].o_id = 0;
                    orders_buf[i].o_d_id = 0;
                    orders_buf[i].o_w_id = 0;
                    orders_buf[i].o_c_id = 0;
                    orders_buf[i].o_carrier_id = 0;
                    orders_buf[i].o_ol_cnt = 0;
                    orders_buf[i].o_all_local = 0;

                    for (j=0;j<=14;j++)
                    {
                              orders_buf[i].o_ol[j].ol = 0;
                              orders_buf[i].o_ol[j].ol_i_id = 0;
                              orders_buf[i].o_ol[j].ol_supply_w_id = 0;
                              orders_buf[i].o_ol[j].ol_quantity = 0;
                              orders_buf[i].o_ol[j].ol_amount = 0;
                              strcpy(orders_buf[i].o_ol[j].ol_dist_info,"");
                    }
          }


}


//=======================================================================
//
// Function   : OrdersBufLoad
//
// Fills shared buffer for ORDERS, NEWORDER, and ORDERLINE
//
//=======================================================================

void OrdersBufLoad(int d_id, int w_id)
{

          int     cust[ORDERS_PER_DISTRICT+1];
          long    o_id;
          short   ol;

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

          GetPermutation(cust, orders_per_district);

          for (o_id=0;o_id<orders_per_district;o_id++)
          {

                    // Generate ORDER and NEW-ORDER data

                    orders_buf[o_id].o_d_id = d_id;
                    orders_buf[o_id].o_w_id = w_id;
                    orders_buf[o_id].o_id = o_id+1;
                    orders_buf[o_id].o_c_id = cust[o_id+1];
                    orders_buf[o_id].o_ol_cnt = (short)RandomNumber(5L, 15L);

                    if (o_id < first_new_order)
                    {
                              orders_buf[o_id].o_carrier_id =
(short)RandomNumber(1L, 10L);
                              orders_buf[o_id].o_all_local  = 1;
                    }
                    else
                    {
                              orders_buf[o_id].o_carrier_id = 0;
                              orders_buf[o_id].o_all_local  = 1;
                    }

                    for (ol=0; ol<orders_buf[o_id].o_ol_cnt; ol++)
                    {

                              orders_buf[o_id].o_ol[ol].ol = ol+1;
                              orders_buf[o_id].o_ol[ol].ol_i_id = RandomNumber(1L,
max_items);
                              orders_buf[o_id].o_ol[ol].ol_supply_w_id = w_id;
                              orders_buf[o_id].o_ol[ol].ol_quantity = 5;
                              MakeAlphaString(24, 24, OL_DIST_INFO_LEN,
&orders_buf[o_id].o_ol[ol].ol_dist_info);

                              // Generate ORDER-LINE data
                              if (o_id < first_new_order)
                              {
                                        orders_buf[o_id].o_ol[ol].ol_amount = 0;
                                        // Added to insure ol_delivery_d set
properly during load


          FormatDate(&orders_buf[o_id].o_ol[ol].ol_delivery_d);

                              }
                              else
                              {
                                        orders_buf[o_id].o_ol[ol].ol_amount =
RandomNumber(1,999999)/100.0;
                                        // Added to insure ol_delivery_d set
properly during load

                                        // odbc datetime format

          strcpy(orders_buf[o_id].o_ol[ol].ol_delivery_d,"1899-12-31 00:00:00.000");

                              }
                    }
          }
}


//=======================================================================
//
// Function   : LoadOrdersTable
//
//=======================================================================

void LoadOrdersTable(LOADER_TIME_STRUCT *orders_time_start)
{
```

```
          int         i;
    long        o_id;
          short     o_d_id;
          short     o_w_id;
    long        o_c_id;
    short       o_carrier_id;
    short       o_ol_cnt;
    short       o_all_local;
          char                o_entry_d[O_ENTRY_D_LEN+1];
          RETCODE             rc;
          DBINT               rcint;

          // bind ORDER data
    rc = bcp_bind(o_hdbc1, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, 1);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
2);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
3);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_c_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
4);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc1);

          rc = bcp_bind(o_hdbc1, (BYTE *) &o_entry_d, 0, O_ENTRY_D_LEN, NULL, 0,
SQLCHARACTER, 5);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_carrier_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 6);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_ol_cnt, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
7);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc1);

    rc = bcp_bind(o_hdbc1, (BYTE *) &o_all_local, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 8);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc1);

    for (i = 0; i < orders_per_district; i++)
    {
                    o_id         = orders_buf[i].o_id;
                    o_d_id       = orders_buf[i].o_d_id;
                    o_w_id       = orders_buf[i].o_w_id;
                    o_c_id       = orders_buf[i].o_c_id;
                    o_carrier_id = orders_buf[i].o_carrier_id;
                    o_ol_cnt     = orders_buf[i].o_ol_cnt;
                    o_all_local  = orders_buf[i].o_all_local;

                    FormatDate(&o_entry_d);
                    // send data to server
                    rc = bcp_sendrow(o_hdbc1);
                    if (rc != SUCCEED)
                              HandleErrorDBC(o_hdbc1);

                    orders_rows_loaded++;
                    CheckForCommit(o_hdbc1, o_hstmt1, orders_rows_loaded, "orders",
&orders_time_start->time_start);
    }

          // rcint = bcp_batch(o_hdbc1);
          // if (rcint < 0)
          //        HandleErrorDBC(o_hdbc1);

          if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
          {
                    rcint = bcp_done(o_hdbc1);
                    if (rcint < 0)
                              HandleErrorDBC(o_hdbc1);

                    SQLFreeStmt(o_hstmt1, SQL_DROP);
                    SQLDisconnect(o_hdbc1);
                    SQLFreeConnect(o_hdbc1);

                    // if build index after load...
                    if ((aptr->build_index == 1) && (aptr->index_order == 0))
                              BuildIndex("idxordcl");

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

}


//======================================================================
//
// Function   : LoadNewOrderTable
//
//======================================================================

void LoadNewOrderTable(LOADER_TIME_STRUCT *new_order_time_start)
{
    int         i;
    long        o_id;
    short       o_d_id;
    short       o_w_id;
          RETCODE             rc;
          DBINT               rcint;

          // Bind NEW-ORDER data

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, 1);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc2);

    rc = bcp_bind(o_hdbc2, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
2);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc2);
```

```
    rc = bcp_bind(o_hdbc2, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
3);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc2);

          for (i = first_new_order; i < last_new_order; i++)
          {
                    o_id    = orders_buf[i].o_id;
                    o_d_id  = orders_buf[i].o_d_id;
                    o_w_id  = orders_buf[i].o_w_id;

                    rc = bcp_sendrow(o_hdbc2);
                    if (rc != SUCCEED)
                              HandleErrorDBC(o_hdbc2);

                    new_order_rows_loaded++;
                    CheckForCommit(o_hdbc2, o_hstmt2, new_order_rows_loaded,
"new_order", &new_order_time_start->time_start);
          }

          // rcint = bcp_batch(o_hdbc2);
          // if (rcint < 0)
          //        HandleErrorDBC(o_hdbc2);

          if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
          {
                    rcint = bcp_done(o_hdbc2);
                    if (rcint < 0)
                              HandleErrorDBC(o_hdbc2);

                    SQLFreeStmt(o_hstmt2, SQL_DROP);
                    SQLDisconnect(o_hdbc2);
                    SQLFreeConnect(o_hdbc2);

                    // if build index after load...
                    if ((aptr->build_index == 1) && (aptr->index_order == 0))
                              BuildIndex("idxnodcl");

          }

}


//======================================================================
//
// Function   : LoadOrderLineTable
//
//======================================================================

void LoadOrderLineTable(LOADER_TIME_STRUCT *order_line_time_start)
{
          int         i,j;
    long        o_id;
          short     o_d_id;
          short     o_w_id;
    long        ol;
          long      ol_i_id;
    short       ol_supply_w_id;
    short       ol_quantity;
    double      ol_amount;
    char        ol_dist_info[DIST_INFO_LEN+1];
          char                ol_delivery_d[OL_DELIVERY_D_LEN+1];
          RETCODE             rc;
          DBINT                rcint;

          // bind ORDER-LINE data
    rc = bcp_bind(o_hdbc3, (BYTE *) &o_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, 1);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &o_d_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
2);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &o_w_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT2,
3);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4, 4);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_i_id, 0, SQL_VARLEN_DATA, NULL, 0, SQLINT4,
5);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_supply_w_id, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 6);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

          rc = bcp_bind(o_hdbc3, (BYTE *) &ol_delivery_d, 0, OL_DELIVERY_D_LEN,
NULL, 0, SQLCHARACTER, 7);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_quantity, 0, SQL_VARLEN_DATA, NULL, 0,
SQLINT2, 8);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) &ol_amount, 0, SQL_VARLEN_DATA, NULL, 0,
SQLFLT8, 9);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

    rc = bcp_bind(o_hdbc3, (BYTE *) ol_dist_info, 0, DIST_INFO_LEN, NULL, 0, 0, 10);
          if (rc != SUCCEED)
                    HandleErrorDBC(o_hdbc3);

          for (i = 0; i < orders_per_district; i++)
    {
                    o_id    = orders_buf[i].o_id;
                    o_d_id  = orders_buf[i].o_d_id;
                    o_w_id  = orders_buf[i].o_w_id;

                    for (j=0; j < orders_buf[i].o_ol_cnt; j++)
                    {
                              ol             = orders_buf[i].o_ol[j].ol;
                              ol_i_id        = orders_buf[i].o_ol[j].ol_i_id;
                              ol_supply_w_id = orders_buf[i].o_ol[j].ol_supply_w_id;
                              ol_quantity    = orders_buf[i].o_ol[j].ol_quantity;
```

```
                              ol_amount      = orders_buf[i].o_ol[j].ol_amount;


          strcpy(ol_delivery_d,orders_buf[i].o_ol[j].ol_delivery_d);


          strcpy(ol_dist_info,orders_buf[i].o_ol[j].ol_dist_info);

                              rc = bcp_sendrow(o_hdbc3);
                              if (rc != SUCCEED)
                                        HandleErrorDBC(o_hdbc3);

                              order_line_rows_loaded++;
                              CheckForCommit(o_hdbc3, o_hstmt3,
order_line_rows_loaded, "order_line", &order_line_time_start->time_start);
                    }

          }

          // rcint = bcp_batch(o_hdbc3);
          // if (rcint < 0)
          //        HandleErrorDBC(o_hdbc3);

          if ((o_w_id == aptr->num_warehouses) && (o_d_id == 10))
          {
                    rcint = bcp_done(o_hdbc3);
                    if (rcint < 0)
                              HandleErrorDBC(o_hdbc3);

                    SQLFreeStmt(o_hstmt3, SQL_DROP);
                    SQLDisconnect(o_hdbc3);
                    SQLFreeConnect(o_hdbc3);

                    // if build index after load...
                    if ((aptr->build_index == 1) && (aptr->index_order == 0))
                              BuildIndex("idxodlcl");

          }

}


//=======================================================================
//
// Function   : GetPermutation
//
//=======================================================================

void GetPermutation(int perm[], int n)
{
          int i, r, t;

          for (i=1;i<=n;i++)
                    perm[i] = i;

          for (i=1;i<=n;i++)
          {
                    r = RandomNumber(i,n);
                    t = perm[i];
                    perm[i] = perm[r];
                    perm[r] = t;
          }
```

```
}


//=======================================================================
//
// Function   : CheckForCommit
//
//=======================================================================

void CheckForCommit(HDBC hdbc,
                                                  HSTMT hstmt,
                                        int rows_loaded,
                                                  char *table_name,
                                        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, "isql -S%s -U%s -P%s -e -i%s\\%s.sql > logs\\%s.log",
                                        aptr->server,
                                        aptr->user,
                                        aptr->password,
                                        aptr->index_script_path,
                                        index_script,
                                        index_script);

          system(cmd);
```

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


void HandleErrorDBC (SQLHDBC  hdbc1)
{

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

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

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

                    _strtime(timebuf);
                    _strdate(datebuf);

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

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

                    i++;

          }
}

void HandleErrorSTMT (HSTMT  hstmt1)
{

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

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

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

                    _strtime(timebuf);
                    _strdate(datebuf);

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

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

                    i++;

          }
}


void FormatDate ( char* szTimeCOutput )
{

          struct tm when;
          time_t now;

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

          mktime( &when );

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

          return;

}

//=======================================================================
//
// Function   : CheckSQL
//
//=======================================================================

void CheckSQL()
{

          RETCODE         rc;

          char                          szDriverString[300];
          char                          szDriverStringOut[1024];
          int                                     SQLBuildFlag;
          char                          resp;

          SQLSMALLINT                   cbDriverStringOut;
          SQLCHAR                       SQLVersion[19];
          SQLINTEGER                    SQLVersionInd;
```

```
          SQLAllocHandle(SQL_HANDLE_ENV, SQL_NULL_HANDLE, &henv );

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

          SQLAllocHandle(SQL_HANDLE_DBC, henv , &v_hdbc);

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

          // Open connection to SQL Server

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

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

          rc = SQLDriverConnect ( v_hdbc,
                                                      NULL,

          (SQLCHAR*)&szDriverString[0] ,
                                                            SQL_NTS,

          (SQLCHAR*)&szDriverStringOut[0],

          sizeof(szDriverStringOut),
                                                            &cbDriverStringOut,
                                                            SQL_DRIVER_NOPROMPT );

          if ((rc != SQL_SUCCESS) && (rc != SQL_SUCCESS_WITH_INFO))
                    HandleErrorDBC(v_hdbc);

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

          rc = SQLBindCol(v_hstmt, 4, SQL_C_CHAR, &SQLVersion, sizeof(SQLVersion),
&SQLVersionInd);

          // issue SQL Server extended stored procedure (xp_msver) to determine
installed version
          rc = SQLExecDirect(v_hstmt, "EXECUTE xp_msver ProductVersion", SQL_NTS);

          if ((rc != SQL_SUCCESS) && (rc != SQL_SUCCESS_WITH_INFO))
                    HandleErrorSTMT(v_hstmt);

          rc = SQLFetch(v_hstmt);

          if (rc != SQL_SUCCESS)
                    HandleErrorDBC(v_hdbc);

          // Check build number to ensure 8.00.194 or higher

          SQLBuildFlag = 1;

          // first check the Major version

          if ( SQLVersion[0] == '8' )
          {
                    if (( SQLVersion[2] == '0') & ( SQLVersion[3] == '0' )      )
                    {
```

```
                              if ( SQLVersion[5] == '1' )
                              {
                                        if ( (SQLVersion[6] == '9') &
(SQLVersion[7] == '4') )
                                        {
                                                  SQLBuildFlag = 0;
                                                  printf("You are using SQL Server
version = %9s\n\n", SQLVersion);
                                        }
                                        else
                                        {
                                                  SQLBuildFlag = 1;
                                        }
                              }
                              else
                              {
                                        if ( SQLVersion[5] == '3' )
                                        {
                                                  if ( (SQLVersion[6] >= 53) &
(SQLVersion[7] >= 48) )
                                                  {
                                                            SQLBuildFlag = 0;
                                                            printf("You are using
SQL Server version = %9s\n\n", SQLVersion);
                                                  }
                                                  else
                                                  {
                                                            SQLBuildFlag = 1;
                                                  }
                                        }
                              }
                    }
          }
          else
          {
                    SQLBuildFlag = 1;
          }

          if ( SQLBuildFlag == 1 )
          {
                    printf("NOTE:  The SQL Server version you are using is not
supported\n");
                    printf("for TPC-C benchmarking.  You currently have SQL Server
version %9s\n",SQLVersion);
                    printf("installed.  Please upgrade to Microsoft SQL Server 2000
(8.00.0194) or better.\n");
                    printf("and re-run the SETUP program.\n\n");
                    printf("Do you wish to continue with setup? (Y/N): ");
                    resp = getchar();
                    if ( ( resp == 'N' ) || (resp == 'n') )
                    {
                              printf("\nSetup Aborted!\n");
                              exit(1);
                    }
          }

          SQLFreeHandle(SQL_HANDLE_STMT, v_hstmt);
          SQLDisconnect(v_hdbc);
          SQLFreeHandle(SQL_HANDLE_DBC, v_hdbc);

          return;

}
```

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

void CheckDataBase()
{

          RETCODE         rc;

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

          SQLSMALLINT                   cbDriverStringOut;
          SQLCHAR                       TabName[10];
          SQLINTEGER                    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;
}
```

VerifyTpccLoad.sql

```
--  File:     VERIFYTPCCLOAD.SQL
--            Microsoft TPC-C Benchmark Kit Ver. 4.22
--            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. 4.22
--            Copyright Microsoft, 2001
--  Purpose:  Returns version level of TPC-C stored procs
--  Note:     Always update the return value of this proc for
--            any interface changes or "must have" bug fixes.
--
--  The value returned by this SP defines the "interface level",
--  which must match between the stored procs and the client code.
--  The interface level may be down rev from the current kit.  This
--  indicates that the interface hasn't changed since that version.

use tpcc
go

if exists ( select name from sysobjects where name = "tpcc_version" )
          drop procedure tpcc_version
go

create proc tpcc_version
as
declare   @version  char(8)

begin
          select @version = "4.10.000"
          select @version as "Version"
end

go
```

Appendix C: Tunable Parameters

Microsoft SQL Server 2000 Startup Parameters

```
start sqlservr.exe -c -x -t3502 -T3428 -g64

Where:
-c        Start SQL Server independently of the
Windows NT Service Control Manager
-x        Disables the keeping of CPU time and cache-
hit ratio statistics
-t3502  Prints a message to the SQL Server log at the
start and end of each checkpoint
-g84    Specify the amount of virtual  address space
in MB, SQL Server will leave available for memory
allocations, excluding the buffer pool and threads
stack, such as dynamically- loaded DLLs, extended
procedure calls, etc. Incorrect use of this option
can lead to conditions under which SQL Server may not
start or may encounter runtime errors.
-T3428  enable fast recovery

File locations:
sqlserver.exe                 C:\Program
Files\Microsoft SQL Server\MSSQL\BINN
ERRORLOG            C:\Program Files\Microsoft SQL
Server\MSSQL\LOG
```

Boot.ini Parameters

```
[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
Server 2003, Enterprise" /fastdetect /PAE
```

Microsoft SQL Server 2000 Configuration Parameters

```
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            3           3
 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          704         704
 lightweight pooling
0           1            1           1
 locks
5000  2147483647            0           0
 max degree of parallelism
0          32            1           1
 max server memory (MB)
4  2147483647   2147483647  2147483647
 max text repl size (B)
0  2147483647        65536       65536
 max worker threads
32       32767          330         330
 media retention
0         365            0           0
 min memory per query (KB)
512  2147483647          512         512
 min server memory (MB)
0  2147483647            0           0
 nested triggers
0           1            1           1
 network packet size (B)
512       65536         2048        2048
 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           80          80
 remote access
0           1            1           1
 remote login timeout (s)
0  2147483647           20          20
 remote proc trans
0           1            0           0
 remote query timeout (s)
0  2147483647          600         600
 scan for startup procs
0           1            0           0
 set working set size
0           1            0           0
 show advanced options
0           1            1           1
 two digit year cutoff
1753        9999         2049        2049
 user connections
0       32767            0           0
 user options
0       32767            0           0

1>
```

Benchcraft Profile

```
Profile:  DL385_5728
File Path:          C:\David_rte\DL385_5728.xml
Version:  5

          Number of Engines: 8

                    Name: RTE1
                    Description:
                    Directory: c:\blog\rte1.log
                    Machine: n21
                    Parameter Set: 1.001_best
                    Index: 700000000
                    Seed: 4678
                    Configured Users: 7160
                    Pipe Name: DRIVER44265281
                    Connect Rate: 100000
                    Start Rate: 100000
                    Max. Concurrency: 7160
                    Concurrency Rate: 0
                    CLIENT_NURAND: 25
                    CPU: 0
          Additional Options:

          Name: RTE3
          Description:
          Directory: c:\blog\rte3.log
          Machine: n23
          Parameter Set: 1.001_best
          Index: 200000000
          Seed: 4678
          Configured Users: 7160
          Pipe Name: DRIVER3439676359
          Connect Rate: 100000
          Start Rate: 100000
          Max. Concurrency: 7160
          Concurrency Rate: 0
          CLIENT_NURAND: 25
          CPU: 0
          Additional Options:

          Name: RTE4
          Description:
          Directory: c:\blog\rte4.log
          Machine: n23
          Parameter Set: 1.001_best
          Index: 300000000
          Seed: 4678
          Configured Users: 7160
          Pipe Name: DRIVER4439706187
          Connect Rate: 100000
          Start Rate: 100000
          Max. Concurrency: 7160
          Concurrency Rate: 0
          CLIENT_NURAND: 25
          CPU: 1
          Additional Options:

          Name: RTE2
          Description:
          Directory: c:\blog\rte2.log
          Machine: n21
          Parameter Set: 1.001_best
          Index: 400000000
          Seed: 4678
          Configured Users: 7160
          Pipe Name: DRIVER5346413218
          Connect Rate: 100000
          Start Rate: 100000
          Max. Concurrency: 7160
          Concurrency Rate: 0
          CLIENT_NURAND: 25
          CPU: 1
          Additional Options:

          Name: RTE5
          Description:
          Directory: c:\blog\rte5.log
          Machine: n24
          Parameter Set: 1.001_best
          Index: 400000000
          Seed: 4678
          Configured Users: 7160
          Pipe Name: DRIVER5-418577843
          Connect Rate: 100000
          Start Rate: 100000
          Max. Concurrency: 7160
          Concurrency Rate: 0
          CLIENT_NURAND: 25
          CPU: 0
          Additional Options:

          Name: RTE6
          Description:
          Directory: c:\blog\rte6.log
          Machine: n24
          Parameter Set: 1.001_best
          Index: 500000000
          Seed: 4678
          Configured Users: 7160
          Pipe Name: DRIVER6-418516765
          Connect Rate: 100000
          Start Rate: 100000
          Max. Concurrency: 7160
          Concurrency Rate: 0
          CLIENT_NURAND: 25
          CPU: 1
          Additional Options:

          Name: RTE7
          Description:
          Directory: c:\blog\rte7.log
          Machine: n22
          Parameter Set: 1.001_best
          Index: 600000000
          Seed: 4678
          Configured Users: 7160
          Pipe Name: DRIVER7259371328
          Connect Rate: 100000
          Start Rate: 100000
          Max. Concurrency: 7160
          Concurrency Rate: 0
          CLIENT_NURAND: 25
          CPU: 0
          Additional Options:

          Name: RTE8
          Description:
          Directory: c:\blog\rte8.log
          Machine: n22
          Parameter Set: 1.001_best
          Index: 700000000
          Seed: 4678
          Configured Users: 7160
          Pipe Name: DRIVER8259401875
          Connect Rate: 100000
          Start Rate: 100000
          Max. Concurrency: 7160
          Concurrency Rate: 0
          CLIENT_NURAND: 25
          CPU: 1
          Additional Options:

Number of User groups: 8

          Driver Engine: RTE1
          IIS Server: cr1
          SQL Server: dl385
          Database: tpcc
          User: sa
          Protocol: HTML
          w_id Range: 1 - 716
          w_id Min Warehouse: 1
          w_id Max Warehouse: 5728
          Scale: Normal
          User Count: 7160
          District id: 1
          Scale Down: No

          Driver Engine: RTE2
          IIS Server: cr2
          SQL Server: dl385
          Database: tpcc
          User: sa
          Protocol: HTML
          w_id Range: 717 - 1432
          w_id Min Warehouse: 1
          w_id Max Warehouse: 5728
          Scale: Normal
          User Count: 7160
          District id: 1
          Scale Down: No

          Driver Engine: RTE3
          IIS Server: cr3
          SQL Server: dl385b
          Database: tpcc
          User: sa
          Protocol: HTML
          w_id Range: 1433 - 2148
          w_id Min Warehouse: 1
          w_id Max Warehouse: 5728
          Scale: Normal
          User Count: 7160
          District id: 1
          Scale Down: No

          Driver Engine: RTE4
          IIS Server: cr4
          SQL Server: dl385b
          Database: tpcc
          User: sa
          Protocol: HTML
          w_id Range: 2149 - 2864
          w_id Min Warehouse: 1
          w_id Max Warehouse: 5728
          Scale: Normal
          User Count: 7160
          District id: 1
          Scale Down: No

          Driver Engine: RTE5
          IIS Server: cr1
          SQL Server: dl385
          Database: tpcc
          User: sa
          Protocol: HTML
          w_id Range: 2865 - 3580
          w_id Min Warehouse: 1
          w_id Max Warehouse: 5728
          Scale: Normal
```

```
                    User Count: 7160
                    District id: 1
                    Scale Down: No

                    Driver Engine: RTE6
                    IIS Server: cr2
                    SQL Server: dl385
                    Database: tpcc
                    User: sa
                    Protocol: HTML
                    w_id Range: 3581 - 4296
                    w_id Min Warehouse: 1
                    w_id Max Warehouse: 5728
                    Scale: Normal
                    User Count: 7160
                    District id: 1
                    Scale Down: No

                    Driver Engine: RTE7
                    IIS Server: cr3
                    SQL Server: dl385b
                    Database: tpcc
                    User: sa
                    Protocol: HTML
                    w_id Range: 4297 - 5012
                    w_id Min Warehouse: 1
                    w_id Max Warehouse: 5728
                    Scale: Normal
                    User Count: 7160
                    District id: 1
                    Scale Down: No

                    Driver Engine: RTE8
                    IIS Server: cr4
                    SQL Server: dl385b
                    Database: tpcc
                    User: sa
                    Protocol: HTML
                    w_id Range: 5013 - 5728
                    w_id Min Warehouse: 1
                    w_id Max Warehouse: 5728
                    Scale: Normal
                    User Count: 7160
                    District id: 1
                    Scale Down: No

          Number of Parameter Sets: 66


                    ~Default
                    Default Parameter Set
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         10.00
12.05       18.01      0.10      5.00      0.10
                    Payment           10.00
12.05        3.01      0.10      5.00      0.10
                    Delivery           1.00
5.05         2.01      0.10      5.00      0.10
                    Stock Level        1.00
5.05         2.01      0.10     20.00      0.10
```

```
                    Order Status       1.00
10.05        2.01      0.10      5.00      0.10

                    Tuned Distribution

                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
12.05       18.01      0.10      5.00      0.10
                    Payment           43.10
12.05        3.01      0.10      5.00      0.10
                    Delivery           4.05
5.05         2.01      0.10      5.00      0.10
                    Stock Level        4.05
5.05         2.01      0.10     20.00      0.10
                    Order Status       4.05
10.05        2.01      0.10      5.00      0.10

                    No Think

                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         10.00
0.00         0.00      0.00      5.00      0.00
                    Payment           10.00
0.00         0.00      0.00      5.00      0.00
                    Delivery           1.00
0.00         0.00      0.00      5.00      0.00
                    Stock Level        1.00
0.00         0.00      0.00     20.00      0.00
                    Order Status       1.00
0.00         0.00      0.00      5.00      0.00

                    95%

                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
13.00       18.01      0.10      5.00      0.10
                    Payment           43.10
13.00        3.01      0.10      5.00      0.10
                    Delivery           4.05
6.00         2.01      0.10      5.00      0.10
                    Stock Level        4.05
6.00         2.01      0.10     20.00      0.10
                    Order Status       4.05
11.00        2.01      0.10      5.00      0.10

                    90%

                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
16.00       18.01      0.10      5.00      0.10
```

```
                    Payment           43.05
16.00        3.01      0.10      5.00      0.10
                    Delivery           4.04
9.00         2.01      0.10      5.00      0.10
                    Stock Level        4.04
9.00         2.01      0.10     20.00      0.10
                    Order Status       4.04
14.00        2.01      0.10      5.00      0.10

                    3.0

                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
36.15        0.00      0.10      5.00      0.10
                    Payment           43.10
36.15        0.00      0.10      5.00      0.10
                    Delivery           4.05
15.15        0.00      0.10      5.00      0.10
                    Stock Level        4.05
15.15        0.00      0.10     20.00      0.10
                    Order Status       4.05
30.15        0.00      0.10      5.00      0.10

                    4.0
                    4.0 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
48.20       18.01      0.10      5.00      0.10
                    Payment           43.10
48.20        3.01      0.10      5.00      0.10
                    Delivery           4.05
20.20        2.01      0.10      5.00      0.10
                    Stock Level        4.05
20.20        2.01      0.10     20.00      0.10
                    Order Status       4.05
40.20        2.01      0.10      5.00      0.10

                    3.8
                    3.8 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
45.70       18.01      0.10      5.00      0.10
                    Payment           43.10
45.70        3.01      0.10      5.00      0.10
                    Delivery           4.05
19.10        2.01      0.10      5.00      0.10
                    Stock Level        4.05
19.10        2.01      0.10     20.00      0.10
                    Order Status       4.05
38.10        2.01      0.10      5.00      0.10

                    3.6
                    3.6 tt
```

```
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
43.30       18.01      0.10      5.00      0.10
                    Payment           43.10
43.30        3.01      0.10      5.00      0.10
                    Delivery           4.05
18.10        2.01      0.10      5.00      0.10
                    Stock Level        4.05
18.10        2.01      0.10     20.00      0.10
                    Order Status       4.05
36.18        2.01      0.10      5.00      0.10

                    3.4
                    3.4 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
40.90       18.01      0.10      5.00      0.10
                    Payment           43.10
40.90        3.01      0.10      5.00      0.10
                    Delivery           4.05
17.10        2.01      0.10      5.00      0.10
                    Stock Level        4.05
17.10        2.01      0.10     20.00      0.10
                    Order Status       4.05
17.10        2.01      0.10      5.00      0.10

                    3.2
                    3.2 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
38.50       18.01      0.10      5.00      0.10
                    Payment           43.10
38.50        3.01      0.10      5.00      0.10
                    Delivery           4.05
16.10        2.01      0.10      5.00      0.10
                    Stock Level        4.05
16.10        2.01      0.10     20.00      0.10
                    Order Status       4.05
32.10        2.01      0.10      5.00      0.10

                    2.8
                    2.8 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
33.74       18.01      0.10      5.00      0.10
                    Payment           43.10
33.74        3.01      0.10      5.00      0.10
                    Delivery           4.05
14.14        2.01      0.10      5.00      0.10
                    Stock Level        4.05
14.14        2.01      0.10     20.00      0.10
```

```
                    Order Status       4.05
28.14        2.01      0.10      5.00      0.10

                    2.6
                    2.6 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
31.30       18.01      0.10      5.00      0.10
                    Payment           43.10
31.30        3.01      0.10      5.00      0.10
                    Delivery           4.05
13.10        2.01      0.10      5.00      0.10
                    Stock Level        4.05
13.10        2.01      0.10     20.00      0.10
                    Order Status       4.05
26.10        2.01      0.10      5.00      0.10

                    2.4
                    2.4 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
28.90       18.01      0.10      5.00      0.10
                    Payment           43.10
28.90        3.01      0.10      5.00      0.10
                    Delivery           4.05
12.10        2.01      0.10      5.00      0.10
                    Stock Level        4.05
12.10        2.01      0.10     20.00      0.10
                    Order Status       4.05
24.10        2.01      0.10      5.00      0.10

                    2.2
                    2.2 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
28.90       18.01      0.10      5.00      0.10
                    Payment           43.10
28.90        3.01      0.10      5.00      0.10
                    Delivery           4.05
12.10        2.01      0.10      5.00      0.10
                    Stock Level        4.05
12.10        2.01      0.10     20.00      0.10
                    Order Status       4.05
24.12        2.01      0.10      5.00      0.10

                    2.0
                    2.0 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
24.10       18.01      0.10      5.00      0.10
```

```
                    Payment           43.10
24.10        3.01      0.10      5.00      0.10
                    Delivery           4.05
10.10        2.01      0.10      5.00      0.10
                    Stock Level        4.05
10.10        2.01      0.10     20.00      0.10
                    Order Status       4.05
20.10        2.01      0.10      5.00      0.10

                    5.0
                    5.0 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
60.25       18.01      0.10      5.00      0.10
                    Payment           43.10
60.25        3.01      0.10      5.00      0.10
                    Delivery           4.05
25.25        2.01      0.10      5.00      0.10
                    Stock Level        4.05
25.25        2.01      0.10     20.00      0.10
                    Order Status       4.05
50.25        2.01      0.10      5.00      0.10

                    4.5
                    4.5 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
54.20       18.01      0.10      5.00      0.10
                    Payment           43.10
54.20        3.01      0.10      5.00      0.10
                    Delivery           4.05
22.70        2.01      0.10      5.00      0.10
                    Stock Level        4.05
22.70        2.01      0.10     20.00      0.10
                    Order Status       4.05
45.20        2.01      0.10      5.00      0.10

                    3.5
                    3.5 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
42.10       18.01      0.10      5.00      0.10
                    Payment           43.10
42.10        3.01      0.10      5.00      0.10
                    Delivery           4.05
17.60        2.01      0.10      5.00      0.10
                    Stock Level        4.05
17.60        2.01      0.10     20.00      0.10
                    Order Status       4.05
35.10        2.01      0.10      5.00      0.10

                    1.8
                    1.8 tt
```

```
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
21.60       18.01      0.10      5.00      0.10
                    Payment           43.10
21.60        3.01      0.10      5.00      0.10
                    Delivery           4.05
9.09         2.01      0.10      5.00      0.10
                    Stock Level        4.05
9.09         2.01      0.10     20.00      0.10
                    Order Status       4.05
18.09        2.01      0.10      5.00      0.10

                    4.2
                    4.2 tt
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
54.20       18.01      0.10      5.00      0.10
                    Payment           43.10
54.20        3.01      0.10      5.00      0.10
                    Delivery           4.05
22.70        2.01      0.10      5.00      0.10
                    Stock Level        4.05
22.70        2.01      0.10     20.00      0.10
                    Order Status       4.05
45.20        2.01      0.10      5.00      0.10

                    1.6
                    1.6 tt
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
19.20       18.01      0.10      5.00      0.10
                    Payment           43.10
19.20        3.01      0.10      5.00      0.10
                    Delivery           4.05
8.08         2.01      0.10      5.00      0.10
                    Stock Level        4.05
8.08         2.01      0.10     20.00      0.10
                    Order Status       4.05
16.08        2.01      0.10      5.00      0.10

                    1.4
                    1.4 tt
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
16.87       18.01      0.10      5.00      0.10
                    Payment           43.10
16.87        3.01      0.10      5.00      0.10
                    Delivery           4.05
7.07         2.01      0.10      5.00      0.10
                    Stock Level        4.05
7.07         2.01      0.10     20.00      0.10
                    Order Status       4.05
14.07        2.01      0.10      5.00      0.10

                    1.2
                    1.2 tt
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
14.46       18.01      0.10      5.00      0.10
                    Payment           43.05
14.46        3.01      0.10      5.00      0.10
                    Delivery           4.04
6.06         2.01      0.10      5.00      0.10
                    Stock Level        4.04
6.06         2.01      0.10     20.00      0.10
                    Order Status       4.04
12.06        2.01      0.10      5.00      0.10

                    3.5
                    3.5 tt
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
42.10       18.01      0.10      5.00      0.10
                    Payment           43.10
42.10        3.01      0.10      5.00      0.10
                    Delivery           4.05
17.60        2.01      0.10      5.00      0.10
                    Stock Level        4.05
17.60        2.01      0.10     20.00      0.10
                    Order Status       4.05
35.10        2.01      0.10      5.00      0.10

                    1.9
                    1.9 tt
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
22.89       18.01      0.10      5.00      0.10
                    Payment           43.10
22.89        3.01      0.10      5.00      0.10
                    Delivery           4.05
9.59         2.01      0.10      5.00      0.10
                    Stock Level        4.05
9.59         2.01      0.10     20.00      0.10
                    Order Status       4.05
19.09        2.01      0.10      5.00      0.10

                    1.1
                    1.1 tt
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
13.25       18.01      0.10      5.00      0.10
                    Payment           43.05
13.25        3.01      0.10      5.00      0.10
                    Delivery           4.04
5.55         2.01      0.10      5.00      0.10
                    Stock Level        4.04
5.55         2.01      0.10     20.00      0.10
                    Order Status       4.04
11.05        2.01      0.10      5.00      0.10

                    1.05 better
                    1.05 tt better
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.92
12.65       18.01      0.10      5.00      0.10
                    Payment           43.01
12.65        3.01      0.10      5.00      0.10
                    Delivery           4.02
5.30         2.01      0.10      5.00      0.10
                    Stock Level        4.03
5.30         2.01      0.10     20.00      0.10
                    Order Status       4.02
10.55        2.01      0.10      5.00      0.10

                    1.09
                    1.09 tt
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
13.13       18.01      0.10      5.00      0.10
                    Payment           43.05
13.13        3.01      0.10      5.00      0.10
                    Delivery           4.04
5.50         2.01      0.10      5.00      0.10
                    Stock Level        4.04
5.50         2.01      0.10     20.00      0.10
                    Order Status       4.04
10.95        2.01      0.10      5.00      0.10

                    1.08
                    1.08 tt
                                Txn     Think
Key     RT      RT      Menu
                                Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
13.01       18.01      0.10      5.00      0.10
                    Payment           43.05
13.01        3.01      0.10      5.00      0.10
                    Delivery           4.04
5.45         2.01      0.10      5.00      0.10
                    Stock Level        4.04
5.45         2.01      0.10     20.00      0.10
                    Order Status       4.04
10.85        2.01      0.10      5.00      0.10

                    1.07
                    1.07 tt
```

```
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
12.89       18.01      0.10      5.00      0.10
                    Payment           43.05
12.89        3.01      0.10      5.00      0.10
                    Delivery           4.04
5.40         2.01      0.10      5.00      0.10
                    Stock Level        4.04
5.40         2.01      0.10     20.00      0.10
                    Order Status       4.04
10.75        2.01      0.10      5.00      0.10

                    1.06
                    1.06 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
12.77       18.01      0.10      5.00      0.10
                    Payment           43.05
12.77        3.01      0.10      5.00      0.10
                    Delivery           4.04
5.35         2.01      0.10      5.00      0.10
                    Stock Level        4.04
5.35         2.01      0.10     20.00      0.10
                    Order Status       4.04
10.65        2.01      0.10      5.00      0.10

                    1.15
                    1.15 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
13.85       18.01      0.10      5.00      0.10
                    Payment           43.10
13.85        3.01      0.10      5.00      0.10
                    Delivery           4.05
5.80         2.01      0.10      5.00      0.10
                    Stock Level        4.05
5.80         2.01      0.10     20.00      0.10
                    Order Status       4.05
11.55        2.01      0.10      5.00      0.10

                    1.25
                    1.25 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
15.06       18.01      0.10      5.00      0.10
                    Payment           43.05
15.06        3.01      0.10      5.00      0.10
                    Delivery           4.04
6.31         2.01      0.10      5.00      0.10
                    Stock Level        4.04
6.31         2.01      0.10     20.00      0.10
```

```
                    Order Status       4.04
12.56        2.01      0.10      5.00      0.10

                    1.3
                    1.3 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
15.66       18.01      0.10      5.00      0.10
                    Payment           43.05
15.66        3.01      0.10      5.00      0.10
                    Delivery           4.04
6.56         2.01      0.10      5.00      0.10
                    Stock Level        4.04
6.56         2.01      0.10     20.00      0.10
                    Order Status       4.04
13.06        2.01      0.10      5.00      0.10

                    1.12
                    1.12 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
13.49       18.01      0.10      5.00      0.10
                    Payment           43.10
13.49        3.01      0.10      5.00      0.10
                    Delivery           4.05
5.65         2.01      0.10      5.00      0.10
                    Stock Level        4.05
5.65         2.01      0.10     20.00      0.10
                    Order Status       4.05
11.25        2.01      0.10      5.00      0.10

                    1.18
                    1.18 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
14.21       18.01      0.10      5.00      0.10
                    Payment           43.10
14.21        3.01      0.10      5.00      0.10
                    Delivery           4.05
5.95         2.01      0.10      5.00      0.10
                    Stock Level        4.05
5.95         2.01      0.10     20.00      0.10
                    Order Status       4.05
11.85        2.01      0.10      5.00      0.10

                    1.22
                    1.22 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
14.70       18.01      0.10      5.00      0.10
```

```
                    Payment           43.10
14.70        3.01      0.10      5.00      0.10
                    Delivery           4.05
6.16         2.01      0.10      5.00      0.10
                    Stock Level        4.05
6.16         2.01      0.10     20.00      0.10
                    Order Status       4.05
12.26        2.01      0.10      5.00      0.10

                    1.28
                    1.28 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.75
15.42       18.01      0.10      5.00      0.10
                    Payment           43.10
15.42        3.01      0.10      5.00      0.10
                    Delivery           4.05
6.46         2.01      0.10      5.00      0.10
                    Stock Level        4.05
6.46         2.01      0.10     20.00      0.10
                    Order Status       4.05
12.86        2.01      0.10      5.00      0.10

                    1.04
                    1.04 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
12.53       18.01      0.10      5.00      0.10
                    Payment           43.05
12.53        3.01      0.10      5.00      0.10
                    Delivery           4.04
5.25         2.01      0.10      5.00      0.10
                    Stock Level        4.04
5.25         2.01      0.10     20.00      0.10
                    Order Status       4.04
10.45        2.01      0.10      5.00      0.10

                    1.03
                    1.03 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
12.41       18.01      0.10      5.00      0.10
                    Payment           43.05
12.41        3.01      0.10      5.00      0.10
                    Delivery           4.04
5.20         2.01      0.10      5.00      0.10
                    Stock Level        4.04
5.20         2.01      0.10     20.00      0.10
                    Order Status       4.04
10.35        2.01      0.10      5.00      0.10

                    1.02
                    1.02 tt
```

```
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
12.29       18.01      0.10      5.00      0.10
                    Payment           43.05
12.29        3.01      0.10      5.00      0.10
                    Delivery           4.04
5.15         2.01      0.10      5.00      0.10
                    Stock Level        4.04
5.15         2.01      0.10     20.00      0.10
                    Order Status       4.04
10.25        2.01      0.10      5.00      0.10

                    1.01
                    1.01 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
12.17       18.01      0.10      5.00      0.10
                    Payment           43.05
12.17        3.01      0.10      5.00      0.10
                    Delivery           4.04
5.10         2.01      0.10      5.00      0.10
                    Stock Level        4.04
5.10         2.01      0.10     20.00      0.10
                    Order Status       4.04
10.15        2.01      0.10      5.00      0.10

                    1.005_best
                    1.005 tt best
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.88
12.11       18.01      0.10      5.00      0.10
                    Payment           43.02
12.11        3.01      0.10      5.00      0.10
                    Delivery           4.03
5.07         2.01      0.10      5.00      0.10
                    Stock Level        4.03
5.07         2.01      0.10     20.00      0.10
                    Order Status       4.03
10.10        2.01      0.10      5.00      0.10

                    1.001_best
                    1.001 tt best
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.90
12.06       18.01      0.10      5.00      0.10
                    Payment           43.05
12.06        3.01      0.10      5.00      0.10
                    Delivery           4.01
5.06         2.01      0.10      5.00      0.10
                    Stock Level        4.01
5.06         2.01      0.10     20.00      0.10
```

```
                    Order Status       4.04
10.06        2.01      0.10      5.00      0.10

                    1.03 better
                    1.03 tt more aggressive
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.92
12.41       18.01      0.10      5.00      0.10
                    Payment           43.01
12.41        3.01      0.10      5.00      0.10
                    Delivery           4.02
5.20         2.01      0.10      5.00      0.10
                    Stock Level        4.03
5.20         2.01      0.10     20.00      0.10
                    Order Status       4.02
10.35        2.01      0.10      5.00      0.10

                    1.005 better
                    1.005 tt more aggressive
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.90
12.11       18.01      0.10      5.00      0.10
                    Payment           43.05
12.11        3.01      0.10      5.00      0.10
                    Delivery           4.01
5.07         2.01      0.10      5.00      0.10
                    Stock Level        4.03
5.07         2.01      0.10     20.00      0.10
                    Order Status       4.01
10.10        2.01      0.10      5.00      0.10

                    1.02 better
                    1.02 tt more aggressive
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.92
12.29       18.01      0.10      5.00      0.10
                    Payment           43.01
12.29        3.01      0.10      5.00      0.10
                    Delivery           4.02
5.15         2.01      0.10      5.00      0.10
                    Stock Level        4.03
5.15         2.01      0.10     20.00      0.10
                    Order Status       4.02
10.25        2.01      0.10      5.00      0.10

                    1.01 best
                    1.01 tt best
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.90
12.17       18.01      0.10      5.00      0.10
```

```
                    Payment           43.05
12.17        3.01      0.10      5.00      0.10
                    Delivery           4.01
5.10         2.01      0.10      5.00      0.10
                    Stock Level        4.01
5.10         2.01      0.10     20.00      0.10
                    Order Status       4.04
10.15        2.01      0.10      5.00      0.10

                    1.02 best
                    1.02 tt best
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.96
12.29       18.01      0.00      5.00      0.00
                    Payment           43.00
12.29        3.01      0.00      5.00      0.00
                    Delivery           4.00
5.15         2.01      0.00      5.00      0.00
                    Stock Level        4.03
5.15         2.01      0.00     20.00      0.00
                    Order Status       4.01
10.25        2.01      0.00      5.00      0.00

                    1.03 best
                    1.03 tt best
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.96
12.41       18.01      0.10      5.00      0.10
                    Payment           43.01
12.41        3.01      0.10      5.00      0.10
                    Delivery           4.01
5.20         2.01      0.10      5.00      0.10
                    Stock Level        4.01
5.20         2.01      0.10     20.00      0.10
                    Order Status       4.01
10.35        2.01      0.10      5.00      0.10

                    5.5
                    5.5 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
66.28       18.01      0.10      5.00      0.10
                    Payment           43.05
66.28        3.01      0.10      5.00      0.10
                    Delivery           4.04
27.77        2.01      0.10      5.00      0.10
                    Stock Level        4.04
27.77        2.01      0.10     20.00      0.10
                    Order Status       4.04
55.27        2.01      0.10      5.00      0.10

                    6.0
                    6.0 tt
```

```
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
72.30       18.01      0.10      5.00      0.10
                    Payment           43.05
72.30        3.01      0.10      5.00      0.10
                    Delivery           4.04
30.30        2.01      0.10      5.00      0.10
                    Stock Level        4.04
30.30        2.01      0.10     20.00      0.10
                    Order Status       4.04
60.30        2.01      0.10      5.00      0.10

                    6.5
                    6.5 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
79.53       18.01      0.10      5.00      0.10
                    Payment           43.05
79.53        3.01      0.10      5.00      0.10
                    Delivery           4.04
33.33        2.01      0.10      5.00      0.10
                    Stock Level        4.04
33.33        2.01      0.10     20.00      0.10
                    Order Status       4.04
66.33        2.01      0.10      5.00      0.10

                    7.0
                    7.0 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
84.35       18.01      0.10      5.00      0.10
                    Payment           43.05
84.35        3.01      0.10      5.00      0.10
                    Delivery           4.04
35.35        2.01      0.10      5.00      0.10
                    Stock Level        4.04
35.35        2.01      0.10     20.00      0.10
                    Order Status       4.04
70.35        2.01      0.10      5.00      0.10

                    7.5
                    7.5 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
90.38       18.01      0.10      5.00      0.10
                    Payment           43.05
90.38        3.01      0.10      5.00      0.10
                    Delivery           4.04
37.88        2.01      0.10      5.00      0.10
                    Stock Level        4.04
37.88        2.01      0.10     20.00      0.10
                    Order Status       4.04
75.38        2.01      0.10      5.00      0.10

                    8.0
                    8.0 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
96.40       18.01      0.10      5.00      0.10
                    Payment           43.05
96.40        3.01      0.10      5.00      0.10
                    Delivery           4.04
40.40        2.01      0.10      5.00      0.10
                    Stock Level        4.04
40.40        2.01      0.10     20.00      0.10
                    Order Status       4.04
80.40        2.01      0.10      5.00      0.10

                    8.5
                    8.5 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
102.43      18.01      0.10      5.00      0.10
                    Payment           43.05
192.43       3.01      0.10      5.00      0.10
                    Delivery           4.04
42.92        2.01      0.10      5.00      0.10
                    Stock Level        4.04
42.92        2.01      0.10     20.00      0.10
                    Order Status       4.04
85.42        2.01      0.10      5.00      0.10

                    9.0
                    9.0 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
108.45      18.01      0.10      5.00      0.10
                    Payment           43.05
108.45       3.01      0.10      5.00      0.10
                    Delivery           4.04
45.45        2.01      0.10      5.00      0.10
                    Stock Level        4.04
45.45        2.01      0.10     20.00      0.10
                    Order Status       4.04
90.45        2.01      0.10      5.00      0.10

                    9.5
                    9.5 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
114.47      18.01      0.10      5.00      0.10
                    Payment           43.05
114.47       3.01      0.10      5.00      0.10
                    Delivery           4.04
47.98        2.01      0.10      5.00      0.10
                    Stock Level        4.04
47.98        2.01      0.10     20.00      0.10
                    Order Status       4.04
95.47        2.01      0.10      5.00      0.10

                    10
                    10 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.83
120.50      18.01      0.10      5.00      0.10
                    Payment           43.05
120.50       3.01      0.10      5.00      0.10
                    Delivery           4.04
50.50        2.01      0.10      5.00      0.10
                    Stock Level        4.04
50.50        2.01      0.10     20.00      0.10
                    Order Status       4.04
100.50       2.01      0.10      5.00      0.10

                    1.02 better
                    1.02 more agressive
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.92
12.05       18.01      0.10      5.00      0.10
                    Payment           43.01
12.05        3.01      0.10      5.00      0.10
                    Delivery           4.02
5.05         2.01      0.10      5.00      0.10
                    Stock Level        4.03
5.05         2.01      0.10     20.00      0.10
                    Order Status       4.02
10.05        2.01      0.10      5.00      0.10

                    1.01 better
                    1.01 more aggressive
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.92
12.17       18.01      0.10      5.00      0.10
                    Payment           43.01
12.17        3.01      0.10      5.00      0.10
                    Delivery           4.02
5.10         2.01      0.10      5.00      0.10
                    Stock Level        4.03
5.10         2.01      0.10     20.00      0.10
                    Order Status       4.02
10.15        2.01      0.10      5.00      0.10

                    1.001 better
                    1.001 more aggressive
```

```
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.92
12.06       18.01      0.10      5.00      0.10
                    Payment           43.01
12.06        3.01      0.10      5.00      0.10
                    Delivery           4.02
5.06         2.01      0.10      5.00      0.10
                    Stock Level        4.03
5.06         2.01      0.10     20.00      0.10
                    Order Status       4.02
10.06        2.01      0.10      5.00      0.10

                    FullSpeed
                    1.000 tt
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.92
12.05       18.01      0.10      5.00      0.10
                    Payment           43.01
12.05        3.01      0.10      5.00      0.10
                    Delivery           4.02
5.05         2.01      0.10      5.00      0.10
                    Stock Level        4.03
5.05         2.01      0.10     20.00      0.10
                    Order Status       4.02
10.05        2.01      0.10      5.00      0.10

                    1.003 best
                    1.003 best
                                    Txn     Think
Key     RT      RT      Menu
                                    Weight  Time
Time    Delay   Fence   Delay
                    New Order         44.90
12.09       18.01      0.10      5.00      0.10
                    Payment           43.05
12.09        3.01      0.10      5.00      0.10
                    Delivery           4.01
5.07         2.01      0.10      5.00      0.10
                    Stock Level        4.03
5.07         2.01      0.10     20.00      0.10
                    Order Status       4.01
10.08        2.01      0.10      5.00      0.10
```

Internet Information Server Registry Parameters

```
Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services
\InetInfo]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services
\InetInfo\Parameters]
"ListenBackLog"=dword:00000019
"DispatchEntries"=hex(7):4c,00,44,00,41,00,50,00,53,0
0,56,00,43,00,00,00,00,00
"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:00000842
"Last Help"=dword:00000843
"First Counter"=dword:00000802
"First Help"=dword:00000803
"Library Validation
Code"=hex:30,bb,ee,43,77,5b,c2,01,10,25,00,00,00,00,0
0,00
"WbemAdapFileTime"=hex:00,73,79,5b,bc,d4,c0,01
"WbemAdapFileSize"=dword:00002510
"WbemAdapStatus"=dword:00000000
```

World Wide Web Service Registry Parameters

```
Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services
\W3SVC]
"Type"=dword:00000020
"Start"=dword:00000002
"ErrorControl"=dword:00000001
"ImagePath"=hex(2):43,00,3a,00,5c,00,57,00,49,00,4e,0
0,4e,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):49,00,49,00,53,00,41,00,44,0
0,4d,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."
"FailureActions"=hex:ff,ff,ff,ff,80,3a,0e,00,90,3a,0e
,00,03,00,00,00,98,3a,0e,\
00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
,00,00,00,00,00,00,00

[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,,207"
"/Scripts"="c:\\inetpub\\scripts,,1"
"/IISHelp"="c:\\winnt\\help\\iishelp,,1"
"/IISAdmin"="C:\\WINNT\\System32\\inetsrv\\iisadmin,,
1"
"/IISSamples"="c:\\inetpub\\iissamples,,1"
"/MSADC"="c:\\program files\\common
files\\system\\msadc,,1"
"/_vti_bin"="C:\\Program Files\\Common
Files\\Microsoft Shared\\Web Server
Extensions\\40\\isapi,,1"
"/Printers"="C:\\WINNT\\web\\printers,,201"

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services
\W3SVC\Performance]
"Library"="w3ctrs.dll"
"Open"="OpenW3PerformanceData"
"Close"="CloseW3PerformanceData"
"Collect"="CollectW3PerformanceData"
"Last Counter"=dword:000008e6
"Last Help"=dword:000008e7
"First Counter"=dword:00000844
"First Help"=dword:00000845
"Library Validation
Code"=hex:de,61,7e,46,77,5b,c2,01,10,3d,00,00,00,00,0
0,00
```

```
"WbemAdapFileTime"=hex:00,73,79,5b,bc,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,\

05,12,00,00,00,74,00,6f,00,00,00,1c,00,ff,01,0f,00,01
,02,00,00,00,00,00,05,\

20,00,00,00,20,02,00,00,72,00,73,00,00,00,18,00,8d,01
,02,00,01,01,00,00,00,\

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

00,05,20,00,00,00,23,02,00,00,72,00,73,00,01,01,00,00
,00,00,00,05,12,00,00,\
  00,01,01,00,00,00,00,00,05,12,00,00,00

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services
\W3SVC\Enum]
"0"="Root\\LEGACY_W3SVC\\0000"
"Count"=dword:00000001
"NextInstance"=dword:00000001
```

TPCC Application Registry Parameters

```
Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\TPCC]
"Path"="C:\\Inetpub\\wwwroot\\"
"NumberOfDeliveryThreads"=dword:00000008
"MaxConnections"=dword:00007530
"MaxPendingDeliveries"=dword:000007d0
"DB_Protocol"="DBLIB"
"TxnMonitor"="COM"
"DbServer"="Dl385"
"DbName"="tpcc"
"DbUser"="sa"
"DbPassword"=""
"COM_SinglePool"="YES"
```

Server Bus Performance Driver Registry Parameters

```
Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\
hpqcissb
Class Name:        <NO CLASS>
Last Write Time:   2/4/2005 - 2:59 PM
Value 0
  Name:            Type
  Type:            REG_DWORD
  Data:            0x1

Value 1
  Name:            Start
  Type:            REG_DWORD
  Data:            0

Value 2
  Name:            ErrorControl
  Type:            REG_DWORD
  Data:            0x1

Value 3
  Name:            Tag
  Type:            REG_DWORD
  Data:            0x102

Value 4
  Name:            ImagePath
  Type:            REG_EXPAND_SZ
  Data:            system32\DRIVERS\hpqcissb.sys

Value 5
  Name:            DisplayName
  Type:            REG_SZ
  Data:            Smart Array Controllers Non-
Miniport Bus Driver

Value 6
  Name:            Group
  Type:            REG_SZ
  Data:            port


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\
hpqcissb\Parameters
Class Name:        <NO CLASS>
Last Write Time:   2/4/2005 - 9:11 AM
Value 0
  Name:            CompletionMode
  Type:            REG_DWORD
  Data:            0x1

Value 1
  Name:            CosTimerRate
  Type:            REG_DWORD
  Data:            0x1


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\
hpqcissb\Security
Class Name:        <NO CLASS>
Last Write Time:   1/12/2005 - 11:38 AM
Value 0
  Name:            Security
  Type:            REG_BINARY
  Data:
00000000   01 00 14 80 90 00 00 00 - 9c 00 00 00 14
00 00 00  ................
00000010   30 00 00 00 02 00 1c 00 - 01 00 00 00 02
80 14 00  0...............
00000020   ff 01 0f 00 01 01 00 00 - 00 00 00 01 00
00 00 00  ÿ...............
00000030   02 00 60 00 04 00 00 00 - 00 00 14 00 fd
01 02 00  ..`.........ý...
00000040   01 01 00 00 00 00 00 05 - 12 00 00 00 00
00 18 00  ................
00000050   ff 01 0f 00 01 02 00 00 - 00 00 00 05 20
00 00 00  ÿ........... ...
00000060   20 02 00 00 00 00 14 00 - 8d 01 02 00 01
01 00 00   ...............
00000070   00 00 00 05 0b 00 00 00 - 00 00 18 00 fd
01 02 00  ............ý...
00000080   01 02 00 00 00 00 00 05 - 20 00 00 00 23
02 00 00  ........ ...#...
00000090   01 01 00 00 00 00 00 05 - 12 00 00 00 01
01 00 00  ................
00 00 00 05 12 00 00 00 -
........


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\
hpqcissb\Enum
Class Name:        <NO CLASS>
Last Write Time:   2/4/2005 - 2:59 PM
Value 0
  Name:            0
  Type:            REG_SZ
  Data:
PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_01\5&332338
b7&0&203848

Value 1
  Name:            Count
  Type:            REG_DWORD
  Data:            0x6

Value 2
  Name:            NextInstance
  Type:            REG_DWORD
  Data:            0x6

Value 3
  Name:            1
  Type:            REG_SZ
  Data:
PCI\VEN_0E11&DEV_0046&SUBSYS_409D0E11&REV_01\5&332338
b7&0&283848

Value 4
  Name:            2
  Type:            REG_SZ
  Data:
PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_01\5&590a27
&0&204048

Value 5
  Name:            3
  Type:            REG_SZ
  Data:
PCI\VEN_0E11&DEV_0046&SUBSYS_409D0E11&REV_01\5&590a27
&0&284048

Value 6
  Name:            4
  Type:            REG_SZ
  Data:
PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_01\5&ff12cd
b&0&204850

Value 7
  Name:            5
  Type:            REG_SZ
  Data:
PCI\VEN_0E11&DEV_0046&SUBSYS_409D0E11&REV_01\5&ff12cd
b&0&284850
```

Server Disk Device Performance Driver Registry Parameters

```
Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\
hpqcissd
Class Name:        <NO CLASS>
Last Write Time:   2/4/2005 - 2:59 PM
Value 0
  Name:            Type
  Type:            REG_DWORD
  Data:            0x1

Value 1
  Name:            Start
  Type:            REG_DWORD
  Data:            0

Value 2
  Name:            ErrorControl
  Type:            REG_DWORD
  Data:            0x1

Value 3
  Name:            Tag
  Type:            REG_DWORD
  Data:            0x102

Value 4
  Name:            ImagePath
  Type:            REG_EXPAND_SZ
  Data:            system32\DRIVERS\hpqcissd.sys

Value 5
  Name:            DisplayName
  Type:            REG_SZ
  Data:            Smart Array Controllers Non-
Miniport Disk Driver

Value 6
  Name:            Group
  Type:            REG_SZ
  Data:            Primary Disk


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\
hpqcissd\Security
Class Name:        <NO CLASS>
Last Write Time:   1/12/2005 - 11:39 AM
Value 0
  Name:            Security
  Type:            REG_BINARY
  Data:
00000000   01 00 14 80 90 00 00 00 - 9c 00 00 00 14
00 00 00  ................
00000010   30 00 00 00 02 00 1c 00 - 01 00 00 00 02
80 14 00  0...............
00000020   ff 01 0f 00 01 01 00 00 - 00 00 00 01 00
00 00 00  ÿ...............
00000030   02 00 60 00 04 00 00 00 - 00 00 14 00 fd
01 02 00  ..`.........ý...
00000040   01 01 00 00 00 00 00 05 - 12 00 00 00 00
00 18 00  ................
00000050   ff 01 0f 00 01 02 00 00 - 00 00 00 05 20
00 00 00  ÿ..........  ...
00000060   20 02 00 00 00 00 14 00 - 8d 01 02 00 01
01 00 00   ...............
00000070   00 00 00 05 0b 00 00 00 - 00 00 18 00 fd
01 02 00  ............ý...
00000080   01 02 00 00 00 00 00 05 - 20 00 00 00 23
02 00 00  ........ ...#...
00000090   01 01 00 00 00 00 00 05 - 12 00 00 00 01
01 00 00  ................
00 00 00 05 12 00 00 00 -
........


Key Name:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\
hpqcissd\Enum
Class Name:        <NO CLASS>
Last Write Time:   2/4/2005 - 2:59 PM
Value 0
  Name:            0
  Type:            REG_SZ
  Data:
HPQCISS\Disk&VEN_HP&PROD_LOGICAL_VOLUME\6&23d9aae1&0&
0000004000000000

Value 1
  Name:            Count
  Type:            REG_DWORD
  Data:            0x9

Value 2
  Name:            NextInstance
  Type:            REG_DWORD
  Data:            0x9

Value 3
  Name:            1
  Type:            REG_SZ
  Data:
HPQCISS\Disk&VEN_HP&PROD_LOGICAL_VOLUME\6&23d9aae1&0&
0100004000000000

Value 4
  Name:            2
  Type:            REG_SZ
  Data:
HPQCISS\Disk&VEN_HP&PROD_LOGICAL_VOLUME\6&1faf45ba&0&
0000004000000000

Value 5
  Name:            3
  Type:            REG_SZ
  Data:
HPQCISS\Disk&VEN_HP&PROD_LOGICAL_VOLUME\6&5fb9c63&0&0
000004000000000

Value 6
  Name:            4
  Type:            REG_SZ
  Data:
HPQCISS\Disk&VEN_HP&PROD_LOGICAL_VOLUME\6&5fb9c63&0&0
100004000000000

Value 7
  Name:            5
  Type:            REG_SZ
  Data:
HPQCISS\Disk&VEN_HP&PROD_LOGICAL_VOLUME\6&d314d2&0&00
00004000000000

Value 8
  Name:            6
  Type:            REG_SZ
  Data:
HPQCISS\Disk&VEN_HP&PROD_LOGICAL_VOLUME\6&8e8795&0&00
00004000000000

Value 9
  Name:            7
  Type:            REG_SZ
  Data:
HPQCISS\Disk&VEN_HP&PROD_LOGICAL_VOLUME\6&8e8795&0&01
00004000000000
```

```
Value 10
  Name:           8
  Type:           REG_SZ
  Data:
HPQCISS\Disk&VEN_HP&PROD_LOGICAL_VOLUME\6&1b3f3f8&1&0
000004000000000
```

System Summary

```
System Information report written at: 02/04/05
13:43:37
System Name: DL385
[System Summary]

Item      Value
OS Name   Microsoft(R) Windows(R) Server 2003,
Enterprise Edition
Version   5.2.3790  Build 3790
OS Manufacturer     Microsoft Corporation
System Name         DL385
System Manufacturer HP
System Model        ProLiant DL385 G1
System Type         X86-based PC
Processor x86 Family 15 Model 37 Stepping 1
AuthenticAMD ~2605 Mhz
Processor x86 Family 15 Model 37 Stepping 1
AuthenticAMD ~2605 Mhz
BIOS Version/Date   HP A05, 1/19/2005
SMBIOS Version      2.3
Windows Directory   C:\WINDOWS
System Directory    C:\WINDOWS\system32
Boot Device         \Device\HarddiskVolume10
Locale    United States
Hardware Abstraction Layer    Version = "5.2.3790.0
(srv03_rtm.030324-2048)"
User Name Not Available
Time Zone Central Standard Time
Total Physical Memory         16,384.00 MB
Available Physical Memory     15.49 GB
Total Virtual Memory          32.93 GB
Available Virtual Memory      32.47 GB
Page File Space     17.09 GB
Page File C:\pagefile.sys

[Hardware Resources]



[Conflicts/Sharing]

Resource  Device
I/O Port 0x00000000-0x000003AF          PCI bus
I/O Port 0x00000000-0x000003AF          Direct memory
access controller

I/O Port 0x000003C0-0x000003DF          PCI bus
I/O Port 0x000003C0-0x000003DF          PCI standard
PCI-to-PCI bridge
I/O Port 0x000003C0-0x000003DF          RAGE XL PCI
Family (Microsoft Corporation)

Memory Address 0xF7F00000-0xF7FFFFFF    PCI standard
PCI-to-PCI bridge
Memory Address 0xF7F00000-0xF7FFFFFF    PCI standard
PCI-to-PCI bridge

I/O Port 0x00006000-0x00008FFF          PCI bus
I/O Port 0x00006000-0x00008FFF          PCI standard
PCI-to-PCI bridge
I/O Port 0x00006000-0x00008FFF          PCI standard
PCI-to-PCI bridge
I/O Port 0x00006000-0x00008FFF          Smart Array
6400 Controller (Non-Miniport)

Memory Address 0xF7D00000-0xF7FFFFFF    PCI bus
Memory Address 0xF7D00000-0xF7FFFFFF    PCI standard
PCI-to-PCI bridge
Memory Address 0xF7D00000-0xF7FFFFFF    PCI standard
PCI-to-PCI bridge

I/O Port 0x00005000-0x00005FFF          PCI standard
PCI-to-PCI bridge
I/O Port 0x00005000-0x00005FFF          Smart Array
6i

I/O Port 0x000000A0-0x000000A1          Motherboard
resources
I/O Port 0x000000A0-0x000000A1          Programmable
interrupt controller

IRQ 19    Standard OpenHCD USB Host Controller
IRQ 19    Standard OpenHCD USB Host Controller

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

I/O Port 0x00007000-0x00007FFF          PCI standard
PCI-to-PCI bridge
I/O Port 0x00007000-0x00007FFF          Smart Array
6400 Controller (Non-Miniport)

Memory Address 0xF5F00000-0xF7CFFFFF    PCI bus
Memory Address 0xF5F00000-0xF7CFFFFF    PCI standard
PCI-to-PCI bridge

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

I/O Port 0x00004000-0x00004FFF          PCI standard
PCI-to-PCI bridge
I/O Port 0x00004000-0x00004FFF          Base System
Device

I/O Port 0x00008000-0x00008FFF          PCI standard
PCI-to-PCI bridge
I/O Port 0x00008000-0x00008FFF          PCI standard
PCI-to-PCI bridge
I/O Port 0x00008000-0x00008FFF          Smart Array
6400 Controller (Non-Miniport)

I/O Port 0x00000020-0x00000021          Motherboard
resources
I/O Port 0x00000020-0x00000021          Programmable
interrupt controller


[DMA]

Resource  Device    Status
Channel 7 Direct memory access controller         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         PCI standard PCI-to-PCI
bridge    OK
0x000003B0-0x000003BB         RAGE XL PCI Family
(Microsoft Corporation)       OK
0x000003C0-0x000003DF         PCI bus   OK
0x000003C0-0x000003DF         PCI standard PCI-to-PCI
bridge    OK
0x000003C0-0x000003DF         RAGE XL PCI Family
(Microsoft Corporation)       OK
0x000003E0-0x00000FFF         PCI bus   OK
0x00001000-0x00005FFF         PCI bus   OK
0x00004000-0x00004FFF         PCI standard PCI-to-PCI
bridge    OK
0x00004000-0x00004FFF         Base System Device  OK

0x00004800-0x000048FF         Base System Device  OK

0x00004400-0x000044FF         RAGE XL PCI Family
(Microsoft Corporation)       OK
0x00000A79-0x00000A79         ISAPNP Read Data Port
          OK
0x00000279-0x00000279         ISAPNP Read Data Port
          OK
0x00000274-0x00000277         ISAPNP Read Data Port
          OK
0x00000020-0x00000021         Motherboard resources
          OK
0x00000020-0x00000021         Programmable interrupt
controller          OK
0x00000050-0x00000051         Motherboard resources
          OK
```

```
0x00000092-0x00000092         Motherboard resources
          OK
0x000000A0-0x000000A1         Motherboard resources
          OK
0x000000A0-0x000000A1         Programmable interrupt
controller          OK
0x000000F0-0x000000F1         Motherboard resources
          OK
0x00000230-0x00000233         Motherboard resources
          OK
0x00000260-0x00000267         Motherboard resources
          OK
0x000004D0-0x000004D1         Motherboard resources
          OK
0x00000800-0x0000081F         Motherboard resources
          OK
0x00000840-0x0000085F         Motherboard resources
          OK
0x00000900-0x00000903         Motherboard resources
          OK
0x00000904-0x00000907         Motherboard resources
          OK
0x00000908-0x0000090B         Motherboard resources
          OK
0x0000090C-0x0000092E         Motherboard resources
          OK
0x0000092F-0x0000092F         Motherboard resources
          OK
0x00000930-0x000009FF         Motherboard resources
          OK
0x00000C80-0x00000C87         Motherboard resources
          OK
0x00000CF9-0x00000CF9         Motherboard resources
          OK
0x000002F8-0x000002FF         Motherboard resources
          OK
0x00000040-0x00000043         System timer        OK

0x00000080-0x0000008F         Direct memory access
controller          OK
0x000000C0-0x000000DF         Direct memory access
controller          OK
0x00000061-0x00000061         System speaker      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
0x0000002E-0x0000002F         Extended IO Bus     OK

0x00000220-0x00000223         Extended IO Bus     OK

0x00000240-0x0000025F         Extended IO Bus     OK

0x00000070-0x00000073         Extended IO Bus     OK

0x000003F8-0x000003FF         Communications Port
(COM1)    OK
0x000003F2-0x000003F5         Standard floppy disk
controller          OK
0x000003F7-0x000003F7         Standard floppy disk
controller          OK
```

```
0x00002000-0x0000200F         Standard Dual Channel
PCI 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
0x00005000-0x00005FFF         PCI standard PCI-to-PCI
bridge    OK
0x00005000-0x00005FFF         Smart Array 6i      OK

0x00006000-0x00008FFF         PCI bus   OK
0x00006000-0x00008FFF         PCI standard PCI-to-PCI
bridge    OK
0x00006000-0x00008FFF         PCI standard PCI-to-PCI
bridge    OK
0x00006000-0x00008FFF         Smart Array 6400
Controller (Non-Miniport)     OK
0x00006400-0x000064FF         Smart Array 6400
Controller U320 Expansion Module (Non-Miniport)   OK

0x00007000-0x00007FFF         PCI standard PCI-to-PCI
bridge    OK
0x00007000-0x00007FFF         Smart Array 6400
Controller (Non-Miniport)     OK
0x00007400-0x000074FF         Smart Array 6400
Controller U320 Expansion Module (Non-Miniport)   OK

0x00008000-0x00008FFF         PCI standard PCI-to-PCI
bridge    OK
0x00008000-0x00008FFF         PCI standard PCI-to-PCI
bridge    OK
0x00008000-0x00008FFF         Smart Array 6400
Controller (Non-Miniport)     OK
0x00008400-0x000084FF         Smart Array 6400
Controller U320 Expansion Module (Non-Miniport)   OK


[IRQs]

Resource  Device    Status
IRQ 9     Microsoft ACPI-Compliant System         OK

IRQ 19    Standard OpenHCD USB Host Controller    OK

IRQ 19    Standard OpenHCD USB Host Controller    OK

IRQ 7     Base System Device  OK
IRQ 10    Base System Device  OK
IRQ 0     System timer        OK
IRQ 1     Standard 101/102-Key or Microsoft Natural
PS/2 Keyboard       OK
IRQ 12    PS/2 Compatible Mouse         OK
IRQ 4     Communications Port (COM1)    OK
IRQ 6     Standard floppy disk controller         OK

IRQ 14    Primary IDE Channel OK
IRQ 24    Smart Array 6i      OK
IRQ 28    HP NC7782 Gigabit Server Adapter        OK
```

```
IRQ 29    HP NC7782 Gigabit Server Adapter #2     OK

IRQ 34    Smart Array 6400 Controller (Non-Miniport)
          OK
IRQ 35    Smart Array 6400 Controller U320 Expansion
Module (Non-Miniport)         OK
IRQ 32    Smart Array 6400 Controller (Non-Miniport)
          OK
IRQ 33    Smart Array 6400 Controller U320 Expansion
Module (Non-Miniport)         OK
IRQ 36    Smart Array 6400 Controller (Non-Miniport)
          OK
IRQ 37    Smart Array 6400 Controller U320 Expansion
Module (Non-Miniport)         OK

[Memory]

Resource  Device    Status
0xA0000-0xBFFFF     PCI bus   OK
0xA0000-0xBFFFF     PCI standard PCI-to-PCI bridge
          OK
0xA0000-0xBFFFF     RAGE XL PCI Family (Microsoft
Corporation)        OK
0xF5F00000-0xF7CFFFFF         PCI bus   OK
0xF5F00000-0xF7CFFFFF         PCI standard PCI-to-PCI
bridge    OK
0xF7AF0000-0xF7AF0FFF         Standard OpenHCD USB
Host Controller     OK
0xF7AE0000-0xF7AE0FFF         Standard OpenHCD USB
Host Controller     OK
0xF7AB0000-0xF7AB01FF         Base System Device  OK

0xF7AA0000-0xF7AA07FF         Base System Device  OK

0xF7A90000-0xF7A91FFF         Base System Device  OK

0xF7A00000-0xF7A7FFFF         Base System Device  OK

0xF6000000-0xF6FFFFFF         RAGE XL PCI Family
(Microsoft Corporation)       OK
0xF5FF0000-0xF5FF0FFF         RAGE XL PCI Family
(Microsoft Corporation)       OK
0xF7B00000-0xF7BFFFFF         PCI standard PCI-to-PCI
bridge    OK
0xF7BF0000-0xF7BF1FFF         Smart Array 6i      OK

0xF7B80000-0xF7BBFFFF         Smart Array 6i      OK

0xF7C00000-0xF7CFFFFF         PCI standard PCI-to-PCI
bridge    OK
0xF7CF0000-0xF7CFFFFF         HP NC7782 Gigabit
Server Adapter      OK
0xF7CE0000-0xF7CEFFFF         HP NC7782 Gigabit
Server Adapter #2   OK
0xF7D00000-0xF7FFFFFF         PCI bus   OK
0xF7D00000-0xF7FFFFFF         PCI standard PCI-to-PCI
bridge    OK
0xF7D00000-0xF7FFFFFF         PCI standard PCI-to-PCI
bridge    OK
0xF7DF0000-0xF7DF1FFF         Smart Array 6400
Controller (Non-Miniport)     OK
```

```
0xF7D70000-0xF7D71FFF         Smart Array 6400
Controller U320 Expansion Module (Non-Miniport)   OK

0xF7E00000-0xF7EFFFFF         PCI standard PCI-to-PCI
bridge    OK
0xF7EF0000-0xF7EF1FFF         Smart Array 6400
Controller (Non-Miniport)     OK
0xF7E70000-0xF7E71FFF         Smart Array 6400
Controller U320 Expansion Module (Non-Miniport)   OK

0xF7F00000-0xF7FFFFFF         PCI standard PCI-to-PCI
bridge    OK
0xF7F00000-0xF7FFFFFF         PCI standard PCI-to-PCI
bridge    OK
0xF7FF0000-0xF7FF1FFF         Smart Array 6400
Controller (Non-Miniport)     OK
0xF7F70000-0xF7F71FFF         Smart Array 6400
Controller U320 Expansion Module (Non-Miniport)   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)
          3/25/2003 6:00 AM
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)    3/25/2003 6:00 AM
c:\windows\system32\msg723.acm          Microsoft
Corporation                   OK
          C:\WINDOWS\system32\MSG723.ACM
          4.4.4000  116.00 KB (118,784 bytes)
          1/10/2005 12:14 AM
c:\windows\system32\msg711.acm          Microsoft
Corporation                   OK
          C:\WINDOWS\system32\MSG711.ACM
          5.2.3790.0 (srv03_rtm.030324-2048)
          10.00 KB (10,240 bytes)       3/25/2003
6:00 AM
c:\windows\system32\tssoft32.acm        DSP GROUP,
INC.                OK
          C:\WINDOWS\system32\TSSOFT32.ACM
          1.01      9.50 KB (9,728 bytes)
          3/25/2003 6:00 AM
c:\windows\system32\imaadp32.acm        Microsoft
Corporation                   OK
          C:\WINDOWS\system32\IMAADP32.ACM
          5.2.3790.0 (srv03_rtm.030324-2048)
```

```
          15.50 KB (15,872 bytes)       3/25/2003
6:00 AM
c:\windows\system32\msgsm32.acm         Microsoft
Corporation                   OK
          C:\WINDOWS\system32\MSGSM32.ACM
          5.2.3790.0 (srv03_rtm.030324-2048)
          20.50 KB (20,992 bytes)       3/25/2003
6:00 AM
c:\windows\system32\msadp32.acm         Microsoft
Corporation                   OK
          C:\WINDOWS\system32\MSADP32.ACM
          5.2.3790.0 (srv03_rtm.030324-2048)
          14.50 KB (14,848 bytes)       3/25/2003
6:00 AM
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)
          3/25/2003 6:00 AM

[Video Codecs]

CODEC     Manufacturer        Description
          Status    File      Version   Size
          Creation Date
c:\windows\system32\msh261.drv          Microsoft
Corporation                   OK
          C:\WINDOWS\system32\MSH261.DRV
          4.4.4000  180.00 KB (184,320 bytes)
          1/10/2005 12:14 AM
c:\windows\system32\tsbyuv.dll          Microsoft
Corporation                   OK
          C:\WINDOWS\system32\TSBYUV.DLL
          5.2.3790.0 (srv03_rtm.030324-2048)
          8.00 KB (8,192 bytes)         3/24/2003
7:50 PM
c:\windows\system32\msyuv.dll Microsoft Corporation
                    OK
          C:\WINDOWS\system32\MSYUV.DLL 5.2.3790.0
(srv03_rtm.030324-2048)       16.50 KB (16,896 bytes)
          3/24/2003 7:49 PM
c:\windows\system32\msvidc32.dll        Microsoft
Corporation                   OK
          C:\WINDOWS\system32\MSVIDC32.DLL
          5.2.3790.0 (srv03_rtm.030324-2048)
          26.50 KB (27,136 bytes)       3/25/2003
6:00 AM
c:\windows\system32\msrle32.dll         Microsoft
Corporation                   OK
          C:\WINDOWS\system32\MSRLE32.DLL
          5.2.3790.0 (srv03_rtm.030324-2048)
          10.50 KB (10,752 bytes)       3/25/2003
6:00 AM
c:\windows\system32\iyuv_32.dll         Microsoft
Corporation                   OK
          C:\WINDOWS\system32\IYUV_32.DLL
          5.2.3790.0 (srv03_rtm.030324-2048)
          45.00 KB (46,080 bytes)       3/24/2003
7:49 PM
c:\windows\system32\msh263.drv          Microsoft
Corporation                   OK
          C:\WINDOWS\system32\MSH263.DRV
```

```
          4.4.4000  284.00 KB (290,816 bytes)
          3/24/2003 7:46 PM

[CD-ROM]

Item      Value
Drive     D:
Description         CD-ROM Drive
Media Loaded        No
Media Type          CD-ROM
Name      COMPAQ CD-ROM SN-124
Manufacturer        (Standard CD-ROM drives)
Status    OK
Transfer Rate       Not Available
SCSI Target ID      0
PNP Device ID       IDE\CDROMCOMPAQ_CD-ROM_SN-
124____________________N104____\5&2DC47F1C&0&0.0.0

Driver    c:\windows\system32\drivers\cdrom.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 49.50 KB (50,688
bytes), 3/25/2003 6:00 AM)

[Sound Device]

Item      Value

[Display]

Item      Value
Name      RAGE XL PCI Family (Microsoft Corporation)

PNP Device ID
          PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_2
7\4&12365AD0&0&1818
Adapter Type        ATI RAGE XL PCI (B41), ATI
Technologies Inc. compatible
Adapter Description RAGE XL PCI Family (Microsoft
Corporation)
Adapter RAM         8.00 MB (8,388,608 bytes)
Installed Drivers   ati2drad.dll
Driver Version      5.10.3663.6013
INF File  atiixpad.inf (ati2mpad section)
Color Planes        1
Color Table Entries 4294967296
Resolution          1024 x 768 x 60 hertz
Bits/Pixel          32
Memory Address      0xF6000000-0xF6FFFFFF
I/O Port  0x00004400-0x000044FF
Memory Address      0xF5FF0000-0xF5FF0FFF
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),
10/27/2004 7:32 PM)

[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&1C7DEDE8&0
Number of Function Keys       12
I/O Port  0x00000060-0x00000060
I/O Port  0x00000064-0x00000064
IRQ Channel         IRQ 1
Driver    c:\windows\system32\drivers\i8042prt.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 68.50 KB (70,144
bytes), 3/25/2003 6:00 AM)

[Pointing Device]

Item      Value
Hardware Type       PS/2 Compatible Mouse
Number of Buttons   5
Status    OK
PNP Device ID       ACPI\PNP0F13\4&1C7DEDE8&0
Power Management Supported    No
Double Click Threshold        6
Handedness          Right Handed Operation
IRQ Channel         IRQ 12
Driver    c:\windows\system32\drivers\i8042prt.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 68.50 KB (70,144
bytes), 3/25/2003 6:00 AM)

[Modem]

Item      Value

[Network]



[Adapter]

Item      Value
Name      [00000001] RAS Async Adapter
Adapter Type        Not Available
Product Type        RAS Async Adapter
Installed Yes
PNP Device ID       Not Available
Last Reset          2/4/2005 9:43 AM
Index     1
Service Name        AsyncMac
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        No
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         Not Available

Name      [00000002] WAN Miniport (L2TP)
Adapter Type        Not Available
Product Type        WAN Miniport (L2TP)
```

```
Installed Yes
PNP Device ID       ROOT\MS_L2TPMINIPORT\0000
Last Reset          2/4/2005 9:43 AM
Index     2
Service Name        Rasl2tp
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        No
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         Not Available
Driver    c:\windows\system32\drivers\rasl2tp.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 77.00 KB (78,848
bytes), 3/25/2003 6:00 AM)

Name      [00000003] WAN Miniport (PPTP)
Adapter Type        Wide Area Network (WAN)
Product Type        WAN Miniport (PPTP)
Installed Yes
PNP Device ID       ROOT\MS_PPTPMINIPORT\0000
Last Reset          2/4/2005 9:43 AM
Index     3
Service Name        PptpMiniport
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        No
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         50:50:54:50:30:30
Driver    c:\windows\system32\drivers\raspptp.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 70.50 KB (72,192
bytes), 3/25/2003 6:00 AM)

Name      [00000004] WAN Miniport (PPPOE)
Adapter Type        Wide Area Network (WAN)
Product Type        WAN Miniport (PPPOE)
Installed Yes
PNP Device ID       ROOT\MS_PPPOEMINIPORT\0000
Last Reset          2/4/2005 9:43 AM
Index     4
Service Name        RasPppoe
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        No
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         33:50:6F:45:30:30
Driver    c:\windows\system32\drivers\raspppoe.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 38.00 KB (38,912
bytes), 3/25/2003 6:00 AM)

Name      [00000005] Direct Parallel
Adapter Type        Not Available
Product Type        Direct Parallel
Installed Yes
PNP Device ID       ROOT\MS_PTIMINIPORT\0000
Last Reset          2/4/2005 9:43 AM
```

```
Index     5
Service Name        Raspti
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        No
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         Not Available
Driver    c:\windows\system32\drivers\raspti.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 18.50 KB (18,944
bytes), 3/25/2003 6:00 AM)

Name      [00000006] WAN Miniport (IP)
Adapter Type        Not Available
Product Type        WAN Miniport (IP)
Installed Yes
PNP Device ID       ROOT\MS_NDISWANIP\0000
Last Reset          2/4/2005 9:43 AM
Index     6
Service Name        NdisWan
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        No
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         Not Available
Driver    c:\windows\system32\drivers\ndiswan.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 96.50 KB (98,816
bytes), 3/25/2003 6:00 AM)

Name      [00000007] HP NC7782 Gigabit Server Adapter

Adapter Type        Ethernet 802.3
Product Type        HP NC7782 Gigabit Server Adapter

Installed Yes
PNP Device ID
          PCI\VEN_14E4&DEV_1648&SUBSYS_00D00E11&REV_1
0\4&24B9E852&0&3040
Last Reset          2/4/2005 9:43 AM
Index     7
Service Name        q57w2k
IP Address          130.168.208.15
IP Subnet 255.255.0.0
Default IP Gateway  Not Available
DHCP Enabled        No
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         00:12:79:3C:5E:3B
Memory Address      0xF7CF0000-0xF7CFFFFF
IRQ Channel         IRQ 28
Driver    c:\windows\system32\drivers\q57xp32.sys
(7.80.0.0 built by: WinDDK, 185.88 KB (190,336
bytes), 1/10/2005 3:39 PM)

Name      [00000008] HP NC7782 Gigabit Server Adapter

Adapter Type        Ethernet 802.3
```

```
Product Type        HP NC7782 Gigabit Server Adapter

Installed Yes
PNP Device ID
          PCI\VEN_14E4&DEV_1648&SUBSYS_00D00E11&REV_1
0\4&24B9E852&0&3140
Last Reset          2/4/2005 9:43 AM
Index     8
Service Name        q57w2k
IP Address          130.169.208.15
IP Subnet 255.255.0.0
Default IP Gateway  Not Available
DHCP Enabled        No
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         00:12:79:3C:5E:3A
Memory Address      0xF7CE0000-0xF7CEFFFF
IRQ Channel         IRQ 29
Driver    c:\windows\system32\drivers\q57xp32.sys
(7.80.0.0 built by: WinDDK, 185.88 KB (190,336
bytes), 1/10/2005 3:39 PM)

[Protocol]

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

Name      MSAFD Tcpip [UDP/IP]
Connectionless Service        Yes
Guarantees Delivery No
Guarantees Sequencing         No
Maximum Address Size          16 bytes
Maximum Message Size          63.93 KB (65,467 bytes)

Message Oriented    Yes
Minimum Address Size          16 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         Yes
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption No
Supports Expedited Data       No
Supports Graceful Closing     No
Supports Guaranteed Bandwidth No
Supports Multicasting         Yes
```

```
Name      RSVP UDP Service Provider
Connectionless Service        Yes
Guarantees Delivery No
Guarantees Sequencing         No
Maximum Address Size          16 bytes
Maximum Message Size          63.93 KB (65,467 bytes)

Message Oriented    Yes
Minimum Address Size          16 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         Yes
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption Yes
Supports Expedited Data       No
Supports Graceful Closing     No
Supports Guaranteed Bandwidth No
Supports Multicasting         Yes

Name      RSVP TCP Service Provider
Connectionless Service        No
Guarantees Delivery Yes
Guarantees Sequencing         Yes
Maximum Address Size          16 bytes
Maximum Message Size          0 bytes
Message Oriented    No
Minimum Address Size          16 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         No
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption Yes
Supports Expedited Data       Yes
Supports Graceful Closing     Yes
Supports Guaranteed Bandwidth No
Supports Multicasting         No

Name      MSAFD NetBIOS
[\Device\NetBT_Tcpip_{CFD7B2C3-6CE2-4FE3-9B33-
A7A100DD95D0}] SEQPACKET 3
Connectionless Service        No
Guarantees Delivery Yes
Guarantees Sequencing         Yes
Maximum Address Size          20 bytes
Maximum Message Size          62.50 KB (64,000 bytes)

Message Oriented    Yes
Minimum Address Size          20 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         No
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption No
Supports Expedited Data       No
Supports Graceful Closing     No
Supports Guaranteed Bandwidth No
Supports Multicasting         No

Name      MSAFD NetBIOS
[\Device\NetBT_Tcpip_{CFD7B2C3-6CE2-4FE3-9B33-
A7A100DD95D0}] DATAGRAM 3
Connectionless Service        Yes
Guarantees Delivery No
```

```
Guarantees Sequencing         No
Maximum Address Size          20 bytes
Maximum Message Size          62.50 KB (64,000 bytes)

Message Oriented    Yes
Minimum Address Size          20 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         Yes
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption No
Supports Expedited Data       No
Supports Graceful Closing     No
Supports Guaranteed Bandwidth No
Supports Multicasting         No

Name      MSAFD NetBIOS
[\Device\NetBT_Tcpip_{F9E401AE-BE92-43F8-BC4E-
46066659CCAE}] SEQPACKET 0
Connectionless Service        No
Guarantees Delivery Yes
Guarantees Sequencing         Yes
Maximum Address Size          20 bytes
Maximum Message Size          62.50 KB (64,000 bytes)

Message Oriented    Yes
Minimum Address Size          20 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         No
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption No
Supports Expedited Data       No
Supports Graceful Closing     No
Supports Guaranteed Bandwidth No
Supports Multicasting         No

Name      MSAFD NetBIOS
[\Device\NetBT_Tcpip_{F9E401AE-BE92-43F8-BC4E-
46066659CCAE}] DATAGRAM 0
Connectionless Service        Yes
Guarantees Delivery No
Guarantees Sequencing         No
Maximum Address Size          20 bytes
Maximum Message Size          62.50 KB (64,000 bytes)

Message Oriented    Yes
Minimum Address Size          20 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         Yes
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption No
Supports Expedited Data       No
Supports Graceful Closing     No
Supports Guaranteed Bandwidth No
Supports Multicasting         No

Name      MSAFD NetBIOS
[\Device\NetBT_Tcpip_{E7BD8E98-3474-426C-B0D5-
F8AC97AA0122}] SEQPACKET 1
Connectionless Service        No
Guarantees Delivery Yes
Guarantees Sequencing         Yes
Maximum Address Size          20 bytes
Maximum Message Size          62.50 KB (64,000 bytes)

Message Oriented    Yes
Minimum Address Size          20 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         No
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption No
Supports Expedited Data       No
Supports Graceful Closing     No
Supports Guaranteed Bandwidth No
Supports Multicasting         No

Name      MSAFD NetBIOS
[\Device\NetBT_Tcpip_{E7BD8E98-3474-426C-B0D5-
F8AC97AA0122}] DATAGRAM 1
Connectionless Service        Yes
Guarantees Delivery No
Guarantees Sequencing         No
Maximum Address Size          20 bytes
Maximum Message Size          62.50 KB (64,000 bytes)

Message Oriented    Yes
Minimum Address Size          20 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         Yes
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption No
Supports Expedited Data       No
Supports Graceful Closing     No
Supports Guaranteed Bandwidth No
Supports Multicasting         No

Name      MSAFD NetBIOS
[\Device\NetBT_Tcpip_{64FA8ADF-82DE-4970-AFCE-
D13714CBA3DF}] SEQPACKET 2
Connectionless Service        No
Guarantees Delivery Yes
Guarantees Sequencing         Yes
Maximum Address Size          20 bytes
Maximum Message Size          62.50 KB (64,000 bytes)

Message Oriented    Yes
Minimum Address Size          20 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         No
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption No
Supports Expedited Data       No
Supports Graceful Closing     No
Supports Guaranteed Bandwidth No
Supports Multicasting         No

Name      MSAFD NetBIOS
[\Device\NetBT_Tcpip_{64FA8ADF-82DE-4970-AFCE-
D13714CBA3DF}] DATAGRAM 2
Connectionless Service        Yes
Guarantees Delivery No
```

```
Guarantees Sequencing         No
Maximum Address Size          20 bytes
Maximum Message Size          62.50 KB (64,000 bytes)

Message Oriented    Yes
Minimum Address Size          20 bytes
Pseudo Stream Oriented        No
Supports Broadcasting         Yes
Supports Connect Data         No
Supports Disconnect Data      No
Supports Encryption No
Supports Expedited Data       No
Supports Graceful Closing     No
Supports Guaranteed Bandwidth No
Supports Multicasting         No

[WinSock]

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

File      c:\windows\system32\wsock32.dll
Size      22.00 KB (22,528 bytes)
Version   5.2.3790.0 (srv03_rtm.030324-2048)

[Ports]



[Serial]

Item      Value
Name      Communications Port (COM1)
Status    OK
PNP Device ID       ACPI\PNP0501\0
Maximum Input Buffer Size     0
Maximum Output Buffer Size    No
Settable Baud Rate  Yes
Settable Data Bits  Yes
Settable Flow Control         Yes
Settable Parity     Yes
Settable Parity Check         Yes
Settable Stop Bits  Yes
Settable RLSD       Yes
Supports RLSD       Yes
Supports 16 Bit Mode          No
Supports Special Characters   No
Baud Rate 9600
Bits/Byte 8
Stop Bits 1
Parity    None
Busy      No
Abort Read/Write on Error     No
Binary Mode Enabled Yes
Continue XMit on XOff         No
CTS Outflow Control No
Discard NULL Bytes  No
DSR Outflow Control 0
DSR Sensitivity     0
DTR Flow Control Type         Enable
EOF Character       0
```

```
Error Replace Character       0
Error Replacement Enabled     No
Event Character     0
Parity Check Enabled          No
RTS Flow Control Type         Enable
XOff Character      19
XOffXMit Threshold  512
XOn Character       17
XOnXMit Threshold   2048
XOnXOff InFlow Control        0
XOnXOff OutFlow Control       0
IRQ Channel         IRQ 4
I/O Port  0x000003F8-0x000003FF
Driver    c:\windows\system32\drivers\serial.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 76.00 KB (77,824
bytes), 3/25/2003 6:00 AM)

[Parallel]

Item      Value

[Storage]



[Drives]

Item      Value
Drive     C:
Description         Local Fixed Disk
Compressed          No
File System         NTFS
Size      33.91 GB (36,410,552,320 bytes)
Free Space          30.78 GB (33,045,442,560 bytes)

Volume Name
Volume Serial Number          6C324BFF

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          Not Available
File System         Not Available
Size      Not Available
Free Space          Not Available
Volume Name         Not Available
Volume Serial Number          Not Available

Drive     G:
Description         Local Fixed Disk
Compressed          Not Available
File System         Not Available
```

```
Size      Not Available
Free Space          Not Available
Volume Name         Not Available
Volume Serial Number          Not Available

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

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

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

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

Drive     W:
Description         Network Connection
Provider Name       Not Available

Drive     X:
Description         Local Fixed Disk
Compressed          No
File System         NTFS
Size      441.10 GB (473,628,037,120 bytes)
Free Space          298.43 GB (320,434,053,120 bytes)

Volume Name         Back1
Volume Serial Number          4C85A2AB

Drive     Y:
Description         Local Fixed Disk
Compressed          No
File System         NTFS
Size      441.10 GB (473,628,037,120 bytes)
Free Space          299.65 GB (321,743,691,776 bytes)

Volume Name         Back2
```

```
Volume Serial Number          C08B4512

Drive     Z:
Description         Local Fixed Disk
Compressed          No
File System         NTFS
Size      441.10 GB (473,628,037,120 bytes)
Free Space          299.65 GB (321,743,691,776 bytes)

Volume Name         Back3
Volume Serial Number          54922BCE

[Disks]

Item      Value
Description         \\.\PHYSICALDRIVE8
Manufacturer        Not Available
Model     Not Available
Bytes/Sector        512
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  Not Available
SCSI Logical Unit   Not Available
SCSI Port Not Available
SCSI Target ID      Not Available
Sectors/Track       63
Size      67.37 GB (72,341,337,600 bytes)
Total Cylinders     8,795
Total Sectors       141,291,675
Total Tracks        2,242,725
Tracks/Cylinder     255
Partition Disk #8, Partition #0
Partition Size      67.37 GB (72,341,258,240 bytes)

Partition Starting Offset     65,536 bytes

Description         \\.\PHYSICALDRIVE2
Manufacturer        Not Available
Model     Not Available
Bytes/Sector        512
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  Not Available
SCSI Logical Unit   Not Available
SCSI Port Not Available
SCSI Target ID      Not Available
Sectors/Track       63
Size      163.08 GB (175,107,985,920 bytes)
Total Cylinders     21,289
Total Sectors       342,007,785
Total Tracks        5,428,695
Tracks/Cylinder     255
Partition Disk #2, Partition #0
Partition Size      163.08 GB (175,109,046,272 bytes)

Partition Starting Offset     65,536 bytes

Description         \\.\PHYSICALDRIVE0
Manufacturer        Not Available
Model     Not Available
Bytes/Sector        512
```

```
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  Not Available
SCSI Logical Unit   Not Available
SCSI Port Not Available
SCSI Target ID      Not Available
Sectors/Track       63
Size      67.37 GB (72,341,337,600 bytes)
Total Cylinders     8,795
Total Sectors       141,291,675
Total Tracks        2,242,725
Tracks/Cylinder     255
Partition Disk #0, Partition #0
Partition Size      67.38 GB (72,348,598,272 bytes)

Partition Starting Offset     65,536 bytes

Description         \\.\PHYSICALDRIVE1
Manufacturer        Not Available
Model     Not Available
Bytes/Sector        512
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  Not Available
SCSI Logical Unit   Not Available
SCSI Port Not Available
SCSI Target ID      Not Available
Sectors/Track       63
Size      441.10 GB (473,628,072,960 bytes)
Total Cylinders     57,582
Total Sectors       925,054,830
Total Tracks        14,683,410
Tracks/Cylinder     255
Partition Disk #1, Partition #0
Partition Size      441.10 GB (473,628,040,704 bytes)

Partition Starting Offset     32,256 bytes

Description         \\.\PHYSICALDRIVE3
Manufacturer        Not Available
Model     Not Available
Bytes/Sector        512
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  Not Available
SCSI Logical Unit   Not Available
SCSI Port Not Available
SCSI Target ID      Not Available
Sectors/Track       63
Size      67.37 GB (72,341,337,600 bytes)
Total Cylinders     8,795
Total Sectors       141,291,675
Total Tracks        2,242,725
Tracks/Cylinder     255
Partition Disk #3, Partition #0
Partition Size      67.38 GB (72,348,598,272 bytes)

Partition Starting Offset     65,536 bytes

Description         \\.\PHYSICALDRIVE4
```

```
Manufacturer        Not Available
Model     Not Available
Bytes/Sector        512
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  Not Available
SCSI Logical Unit   Not Available
SCSI Port Not Available
SCSI Target ID      Not Available
Sectors/Track       63
Size      441.10 GB (473,628,072,960 bytes)
Total Cylinders     57,582
Total Sectors       925,054,830
Total Tracks        14,683,410
Tracks/Cylinder     255
Partition Disk #4, Partition #0
Partition Size      441.10 GB (473,628,040,704 bytes)

Partition Starting Offset     32,256 bytes

Description         \\.\PHYSICALDRIVE6
Manufacturer        Not Available
Model     Not Available
Bytes/Sector        512
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  Not Available
SCSI Logical Unit   Not Available
SCSI Port Not Available
SCSI Target ID      Not Available
Sectors/Track       63
Size      67.37 GB (72,341,337,600 bytes)
Total Cylinders     8,795
Total Sectors       141,291,675
Total Tracks        2,242,725
Tracks/Cylinder     255
Partition Disk #6, Partition #0
Partition Size      67.37 GB (72,341,258,240 bytes)

Partition Starting Offset     65,536 bytes

Description         \\.\PHYSICALDRIVE7
Manufacturer        Not Available
Model     Not Available
Bytes/Sector        512
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  Not Available
SCSI Logical Unit   Not Available
SCSI Port Not Available
SCSI Target ID      Not Available
Sectors/Track       63
Size      441.10 GB (473,628,072,960 bytes)
Total Cylinders     57,582
Total Sectors       925,054,830
Total Tracks        14,683,410
Tracks/Cylinder     255
Partition Disk #7, Partition #0
Partition Size      441.10 GB (473,628,040,704 bytes)
```

```
Partition Starting Offset     32,256 bytes

Description         \\.\PHYSICALDRIVE5
Manufacturer        Not Available
Model     Not Available
Bytes/Sector        512
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  Not Available
SCSI Logical Unit   Not Available
SCSI Port Not Available
SCSI Target ID      Not Available
Sectors/Track       63
Size      67.37 GB (72,341,337,600 bytes)
Total Cylinders     8,795
Total Sectors       141,291,675
Total Tracks        2,242,725
Tracks/Cylinder     255
Partition Disk #5, Partition #0
Partition Size      67.38 GB (72,348,598,272 bytes)

Partition Starting Offset     65,536 bytes

Description         Disk drive
Manufacturer        (Standard disk drives)
Model     HP LOGICAL VOLUME SCSI Disk Device
Bytes/Sector        512
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  0
SCSI Logical Unit   0
SCSI Port 2
SCSI Target ID      4
Sectors/Track       32
Size      33.91 GB (36,414,750,720 bytes)
Total Cylinders     8,716
Total Sectors       71,122,560
Total Tracks        2,222,580
Tracks/Cylinder     255
Partition Disk #9, Partition #0
Partition Size      33.91 GB (36,410,556,416 bytes)

Partition Starting Offset     16,384 bytes

Description         Disk drive
Manufacturer        (Standard disk drives)
Model     HP LOGICAL VOLUME SCSI Disk Device
Bytes/Sector        512
Media Loaded        Yes
Media Type          Fixed hard disk
Partitions          1
SCSI Bus  0
SCSI Logical Unit   0
SCSI Port 2
SCSI Target ID      5
Sectors/Track       32
Size      273.45 GB (293,620,039,680 bytes)
Total Cylinders     70,279
Total Sectors       573,476,640
Total Tracks        17,921,145
Tracks/Cylinder     255
```

```
Partition Disk #10, Partition #0
Partition Size      273.45 GB (293,619,105,792 bytes)

Partition Starting Offset     65,536 bytes

[SCSI]

Item      Value
Name      Smart Array 6i
Manufacturer        Hewlett-Packard Company
Status    OK
PNP Device ID
          PCI\VEN_0E11&DEV_0046&SUBSYS_40910E11&REV_0
1\4&82820FC&0&2038
Memory Address      0xF7BF0000-0xF7BF1FFF
I/O Port  0x00005000-0x00005FFF
Memory Address      0xF7B80000-0xF7BBFFFF
IRQ Channel         IRQ 24
Driver    c:\windows\system32\drivers\cpqcissm.sys
(5.50.0.32 Build 3, 24.47 KB (25,056 bytes),
10/27/2004 7:22 PM)

Name      Smart Array 6400 Controller (Non-Miniport)

Manufacturer        Hewlett-Packard
Status    OK
PNP Device ID
          PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_0
1\5&332338B7&0&203848
Memory Address      0xF7DF0000-0xF7DF1FFF
I/O Port  0x00006000-0x00008FFF
IRQ Channel         IRQ 34
Driver    c:\windows\system32\drivers\hpqcissb.sys
(5.12.2.32 built by: skav, 39.00 KB (39,936 bytes),
1/12/2005 11:33 AM)

Name      Smart Array 6400 Controller U320 Expansion
Module (Non-Miniport)
Manufacturer        Hewlett-Packard
Status    OK
PNP Device ID
          PCI\VEN_0E11&DEV_0046&SUBSYS_409D0E11&REV_0
1\5&332338B7&0&283848
Memory Address      0xF7D70000-0xF7D71FFF
I/O Port  0x00006400-0x000064FF
IRQ Channel         IRQ 35
Driver    c:\windows\system32\drivers\hpqcissb.sys
(5.12.2.32 built by: skav, 39.00 KB (39,936 bytes),
1/12/2005 11:33 AM)

Name      Smart Array 6400 Controller (Non-Miniport)

Manufacturer        Hewlett-Packard
Status    OK
PNP Device ID
          PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_0
1\5&590A27&0&204048
Memory Address      0xF7EF0000-0xF7EF1FFF
I/O Port  0x00007000-0x00007FFF
IRQ Channel         IRQ 32
Driver    c:\windows\system32\drivers\hpqcissb.sys
(5.12.2.32 built by: skav, 39.00 KB (39,936 bytes),
1/12/2005 11:33 AM)
```

```
Name      Smart Array 6400 Controller U320 Expansion
Module (Non-Miniport)
Manufacturer        Hewlett-Packard
Status    OK
PNP Device ID
          PCI\VEN_0E11&DEV_0046&SUBSYS_409D0E11&REV_0
1\5&590A27&0&284048
Memory Address      0xF7E70000-0xF7E71FFF
I/O Port  0x00007400-0x000074FF
IRQ Channel         IRQ 33
Driver    c:\windows\system32\drivers\hpqcissb.sys
(5.12.2.32 built by: skav, 39.00 KB (39,936 bytes),
1/12/2005 11:33 AM)

Name      Smart Array 6400 Controller (Non-Miniport)

Manufacturer        Hewlett-Packard
Status    OK
PNP Device ID
          PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_0
1\5&FF12CDB&0&204850
Memory Address      0xF7FF0000-0xF7FF1FFF
I/O Port  0x00008000-0x00008FFF
IRQ Channel         IRQ 36
Driver    c:\windows\system32\drivers\hpqcissb.sys
(5.12.2.32 built by: skav, 39.00 KB (39,936 bytes),
1/12/2005 11:33 AM)

Name      Smart Array 6400 Controller U320 Expansion
Module (Non-Miniport)
Manufacturer        Hewlett-Packard
Status    OK
PNP Device ID
          PCI\VEN_0E11&DEV_0046&SUBSYS_409D0E11&REV_0
1\5&FF12CDB&0&284850
Memory Address      0xF7F70000-0xF7F71FFF
I/O Port  0x00008400-0x000084FF
IRQ Channel         IRQ 37
Driver    c:\windows\system32\drivers\hpqcissb.sys
(5.12.2.32 built by: skav, 39.00 KB (39,936 bytes),
1/12/2005 11:33 AM)

[IDE]

Item      Value
Name      Standard Dual Channel PCI IDE Controller

Manufacturer        (Standard IDE ATA/ATAPI
controllers)
Status    OK
PNP Device ID
          PCI\VEN_1022&DEV_7469&SUBSYS_32040E11&REV_0
3\3&20FEA912&0&21
I/O Port  0x00002000-0x0000200F
Driver    c:\windows\system32\drivers\pciide.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 5.50 KB (5,632
bytes), 3/25/2003 6:00 AM)

Name      Primary IDE Channel
Manufacturer        (Standard IDE ATA/ATAPI
controllers)
Status    OK
```

```
PNP Device ID       PCIIDE\IDECHANNEL\4&21637DBD&0&0

I/O Port  0x000001F0-0x000001F7
I/O Port  0x000003F6-0x000003F6
IRQ Channel         IRQ 14
Driver    c:\windows\system32\drivers\atapi.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 89.00 KB (91,136
bytes), 3/25/2003 6:00 AM)

Name      Secondary IDE Channel
Manufacturer        (Standard IDE ATA/ATAPI
controllers)
Status    OK
PNP Device ID       PCIIDE\IDECHANNEL\4&21637DBD&0&1

I/O Port  0x00000170-0x00000177
I/O Port  0x00000376-0x00000376
Driver    c:\windows\system32\drivers\atapi.sys
(5.2.3790.0 (srv03_rtm.030324-2048), 89.00 KB (91,136
bytes), 3/25/2003 6:00 AM)

[Printing]

Name      Driver    Port Name Server Name

[Problem Devices]

Device    PNP Device ID       Error Code
Base System Device
          PCI\VEN_0E11&DEV_B203&SUBSYS_B2060E11&REV_0
1\4&12365AD0&0&1018 The drivers for this device are
not installed.
Base System Device
          PCI\VEN_0E11&DEV_B204&SUBSYS_B2060E11&REV_0
1\4&12365AD0&0&1218 The drivers for this device are
not installed.
System Interrupt Controller
          PCI\VEN_1022&DEV_7451&SUBSYS_00000000&REV_0
1\3&20FEA912&0&39   The drivers for this device are
not installed.
System Interrupt Controller
          PCI\VEN_1022&DEV_7451&SUBSYS_00000000&REV_0
1\3&20FEA912&0&41   The drivers for this device are
not installed.
System Interrupt Controller
          PCI\VEN_1022&DEV_7451&SUBSYS_00000000&REV_0
1\3&33B859B7&0&49   The drivers for this device are
not installed.
System Interrupt Controller
          PCI\VEN_1022&DEV_7451&SUBSYS_00000000&REV_0
1\3&33B859B7&0&51   The drivers for this device are
not installed.

[USB]

Device    PNP Device ID
Standard OpenHCD USB Host Controller
          PCI\VEN_1022&DEV_7464&SUBSYS_32020E11&REV_0
B\4&12365AD0&0&0018
USB Root Hub        USB\ROOT_HUB\5&9B4CD91&0
Standard OpenHCD USB Host Controller
          PCI\VEN_1022&DEV_7464&SUBSYS_32020E11&REV_0
B\4&12365AD0&0&0118
```

```
USB Root Hub        USB\ROOT_HUB\5&194CD4CC&0

[Software Environment]



[System Drivers]

Name      Description         File      Type
          Started   Start Mode          State
          Status    Error Control       Accept Pause
          Accept Stop
abiosdsk  Abiosdsk  Not Available       Kernel Driver
          No        Disabled  Stopped   OK
          Ignore    No        No
acpi      Microsoft ACPI Driver
          c:\windows\system32\drivers\acpi.sys
          Kernel Driver       Yes       Boot
          Running   OK        Normal    No        Yes

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

adpu160m  adpu160m  Not Available       Kernel Driver
          No        Disabled  Stopped   OK
          Normal    No        No
adpu320   adpu320   Not Available       Kernel Driver
          No        Disabled  Stopped   OK
          Normal    No        No
afcnt     afcnt     Not Available       Kernel Driver
          No        Disabled  Stopped   OK
          Normal    No        No
afd       AFD Networking Support Environment
          c:\windows\system32\drivers\afd.sys
          Kernel Driver       Yes       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
          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
          c:\windows\system32\drivers\cpqcissm.sys
          Kernel Driver       Yes       Boot
          Running   OK        Normal    No        Yes
```

```
cpqfcalm  cpqfcalm  Not Available       Kernel Driver
          No        Disabled  Stopped   OK
          Normal    No        No
cpuspy    CpuSpy Driver
          \??\c:\windows\system32\drivers\cpuspy.sys
          Kernel Driver       No        Manual
          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

dac960nt  dac960nt  Not Available       Kernel Driver
          No        Disabled  Stopped   OK
          Normal    No        No
dellcerc  dellcerc  Not Available       Kernel Driver
          No        Disabled  Stopped   OK
          Normal    No        No
dfsdriver DfsDriver
          c:\windows\system32\drivers\dfs.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
fastfat   Fastfat
          c:\windows\system32\drivers\fastfat.sys
          File System Driver  No        Disabled
          Stopped   OK        Normal    No        No

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  Flpydisk
          c:\windows\system32\drivers\flpydisk.sys
          Kernel Driver       No        System
          Stopped   OK        Ignore    No        No

ftdisk    Volume Manager Driver
          c:\windows\system32\drivers\ftdisk.sys
          Kernel Driver       Yes       Boot
          Running   OK        Normal    No        Yes

gpc       Generic Packet Classifier
          c:\windows\system32\drivers\msgpc.sys
          Kernel Driver       Yes       Manual
          Running   OK        Normal    No        Yes

hpn       hpn       Not Available       Kernel Driver
          No        Disabled  Stopped   OK
          Normal    No        No
hpqcissb  Smart Array Controllers Non-Miniport Bus
Driver    c:\windows\system32\drivers\hpqcissb.sys
          Kernel Driver       Yes       Boot
          Running   OK        Normal    No        Yes

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

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
interruptaffinityfilter       Interrupt Affinity
Filter    c:\windows\system32\drivers\intfiltr.sys
          Kernel Driver       Yes       Boot
          Running   OK        Normal    No        Yes
```

```
ipfilterdriver      IP Traffic Filter Driver
          c:\windows\system32\drivers\ipfltdrv.sys
          Kernel Driver       No        Manual
          Stopped   OK        Normal    No        No

ipinip    IP in IP Tunnel Driver
          c:\windows\system32\drivers\ipinip.sys
          Kernel Driver       No        Manual
          Stopped   OK        Normal    No        No

ipnat     IP Network Address Translator
          c:\windows\system32\drivers\ipnat.sys
          Kernel Driver       No        Manual
          Stopped   OK        Normal    No        No

ipsec     IPSEC driver
          c:\windows\system32\drivers\ipsec.sys
          Kernel Driver       Yes       System
          Running   OK        Normal    No        Yes

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
mnmdd     mnmdd
          c:\windows\system32\drivers\mnmdd.sys
          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

multevent MultEvent Driver
          \??\c:\windows\system32\drivers\multeventdr
iver.sys  Kernel Driver       No        Manual
          Stopped   OK        Normal    No        No

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   Parport
          c:\windows\system32\drivers\parport.sys
          Kernel Driver       No        Manual
          Stopped   OK        Ignore    No        No

partmgr   Partition Manager
          c:\windows\system32\drivers\partmgr.sys
          Kernel Driver       Yes       Boot
          Running   OK        Normal    No        Yes

pci       PCI Bus Driver
          c:\windows\system32\drivers\pci.sys
          Kernel Driver       Yes       Boot
          Running   OK        Critical  No        Yes

pciide    PCIIde
          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

q57w2k    HP NC7782 Gigabit Server Adapter
          c:\windows\system32\drivers\q57xp32.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       Yes       Manual
          Running   OK        Ignore    No        Yes

redbook   Digital CD Audio Playback Filter Driver
          c:\windows\system32\drivers\redbook.sys
          Kernel Driver       Yes       System
          Running   OK        Normal    No        Yes

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 Driver       Yes       System
          Running   OK        Ignore    No        Yes

sfloppy   High-Capacity Floppy Disk Drive
          c:\windows\system32\drivers\sfloppy.sys
          Kernel Driver       No        Manual
          Stopped   OK        Normal    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  Yes       Manual
          Running   OK        Normal    No        Yes

startdss  startdss
          c:\windows\system32\drivers\startdss.sys
          Kernel Driver       No        Disabled
          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       Yes       Manual
          Running   OK        Ignore    No        Yes

termdd    Terminal Device Driver
          c:\windows\system32\drivers\termdd.sys
          Kernel Driver       Yes       System
          Running   OK        Normal    No        Yes

toside    TosIde    Not Available       Kernel Driver
          No        Disabled  Stopped   OK
          Normal    No        No
udfs      Udfs
          c:\windows\system32\drivers\udfs.sys
          File System Driver  No        Disabled
          Stopped   OK        Normal    No        No

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

usbstor   USB Mass Storage Driver
          c:\windows\system32\drivers\usbstor.sys
          Kernel Driver       No        Manual
          Stopped   OK        Normal    No        No

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        Yes       COMPUTER
          5.2.3790.0          10/1/2002 (Standard
computers)          hal.inf   Not Available
          ROOT\ACPI_HAL\0000
Microsoft ACPI-Compliant System         Yes
          SYSTEM    5.2.3790.0          10/1/2002
          Microsoft acpi.inf  Not Available
          ACPI_HAL\PNP0C08\0
Processor Yes       PROCESSOR 5.2.3790.0
          10/1/2002 (Standard processor types)
          cpu.inf   Not Available
          ACPI\AUTHENTICAMD_-
_X86_FAMILY_15_MODEL_37\_0
Processor Yes       PROCESSOR 5.2.3790.0
          10/1/2002 (Standard processor types)
          cpu.inf   Not Available
          ACPI\AUTHENTICAMD_-
_X86_FAMILY_15_MODEL_37\_1
```

```
PCI bus   Yes       SYSTEM    5.2.3790.0
          10/1/2002 (Standard system devices)
          machine.inf         Not Available
          ACPI\PNP0A03\7
PCI standard PCI-to-PCI bridge          Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available
          PCI\VEN_1022&DEV_7460&SUBSYS_00000000&REV_0
7\3&20FEA912&0&18
Standard OpenHCD USB Host Controller    Yes       USB
          5.2.3790.0          10/1/2002 (Standard USB
Host Controller)    usbport.inf         Not Available
          PCI\VEN_1022&DEV_7464&SUBSYS_32020E11&REV_0
B\4&12365AD0&0&0018
USB Root Hub        Yes       USB       5.2.3790.0
          10/1/2002 (Standard USB Host Controller)
          usbport.inf         Not Available
          USB\ROOT_HUB\5&9B4CD91&0
Standard OpenHCD USB Host Controller    Yes       USB
          5.2.3790.0          10/1/2002 (Standard USB
Host Controller)    usbport.inf         Not Available
          PCI\VEN_1022&DEV_7464&SUBSYS_32020E11&REV_0
B\4&12365AD0&0&0118
USB Root Hub        Yes       USB       5.2.3790.0
          10/1/2002 (Standard USB Host Controller)
          usbport.inf         Not Available
          USB\ROOT_HUB\5&194CD4CC&0
Base System Device  Not Available       UNKNOWN   Not
Available Not Available       Not Available       Not
Available Not Available
          PCI\VEN_0E11&DEV_B203&SUBSYS_B2060E11&REV_0
1\4&12365AD0&0&1018
Base System Device  Not Available       UNKNOWN   Not
Available Not Available       Not Available       Not
Available Not Available
          PCI\VEN_0E11&DEV_B204&SUBSYS_B2060E11&REV_0
1\4&12365AD0&0&1218
RAGE XL PCI Family (Microsoft Corporation)        Yes
          DISPLAY   5.10.2600.6014      8/8/2001  ATI
Technologies Inc.   atiixpad.inf        Not Available
          PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_2
7\4&12365AD0&0&1818
Plug and Play Monitor         Yes       MONITOR
          5.1.2001.0          6/6/2001  (Standard
monitor types)      monitor.inf         Not Available
          DISPLAY\AVO0000\5&38B1FFCB&0&80000001&01&03

PCI standard ISA bridge       Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          PCI\VEN_1022&DEV_7468&SUBSYS_00000000&REV_0
5\3&20FEA912&0&20
ISAPNP Read Data Port         Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          ISAPNP\READDATAPORT\0
Motherboard resources         Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          ACPI\PNP0C02\0
Programmable interrupt controller       Yes
          SYSTEM    5.2.3790.0          10/1/2002
```

```
          (Standard system devices)     machine.inf
          Not Available
          ACPI\PNP0000\4&1C7DEDE8&0
System timer        Yes       SYSTEM    5.2.3790.0
          10/1/2002 (Standard system devices)
          machine.inf         Not Available
          ACPI\PNP0100\4&1C7DEDE8&0
Direct memory access controller         Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available
          ACPI\PNP0200\4&1C7DEDE8&0
System speaker      Yes       SYSTEM    5.2.3790.0
          10/1/2002 (Standard system devices)
          machine.inf         Not Available
          ACPI\PNP0800\4&1C7DEDE8&0
Standard 101/102-Key or Microsoft Natural PS/2
Keyboard  Yes       KEYBOARD  5.2.3790.0
          10/1/2002 (Standard keyboards)
          keyboard.inf        Not Available
          ACPI\PNP0303\4&1C7DEDE8&0
PS/2 Compatible Mouse         Yes       MOUSE
          5.2.3790.0          10/1/2002 Microsoft
          msmouse.inf         Not Available
          ACPI\PNP0F13\4&1C7DEDE8&0
Extended IO Bus     Yes       SYSTEM    5.2.3790.0
          10/1/2002 (Standard system devices)
          machine.inf         Not Available
          ACPI\PNP0A06\4&1C7DEDE8&0
Communications Port Yes       PORTS     5.2.3790.0
          10/1/2002 (Standard port types)
          msports.inf         Not Available
          ACPI\PNP0501\0
Standard floppy disk controller         Yes       FDC
          5.2.3790.0          10/1/2002 (Standard
floppy disk controllers)      fdc.inf   Not Available
          ACPI\PNP0700\5&1C430410&0
Standard Dual Channel PCI IDE Controller          Yes
          HDC       5.2.3790.0          10/1/2002
          (Standard IDE ATA/ATAPI controllers)
          mshdc.inf Not Available
          PCI\VEN_1022&DEV_7469&SUBSYS_32040E11&REV_0
3\3&20FEA912&0&21
Primary IDE Channel Yes       HDC       5.2.3790.0
          10/1/2002 (Standard IDE ATA/ATAPI
controllers)        mshdc.inf Not Available
          PCIIDE\IDECHANNEL\4&21637DBD&0&0
CD-ROM Drive        Yes       CDROM     5.2.3790.0
          10/1/2002 (Standard CD-ROM drives)
          cdrom.inf Not Available
          IDE\CDROMCOMPAQ_CD-ROM_SN-
124____________________N104____\5&2DC47F1C&0&0.0.0

Secondary IDE Channel         Yes       HDC
          5.2.3790.0          10/1/2002 (Standard IDE
ATA/ATAPI controllers)        mshdc.inf Not Available
          PCIIDE\IDECHANNEL\4&21637DBD&0&1
AMD-8111 System Management Controller   Yes
          SYSTEM    5.2.3790.0          10/1/2002 AMD
          machine.inf         Not Available
          PCI\VEN_1022&DEV_746B&SUBSYS_32050E11&REV_0
5\3&20FEA912&0&23
```

```
PCI standard PCI-to-PCI bridge          Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available
          PCI\VEN_1022&DEV_7450&SUBSYS_00000000&REV_1
2\3&20FEA912&0&38
Smart Array 6i      Yes       SCSIADAPTER
          5.50.0.32 1/21/2004 Hewlett-Packard Company
          oem0.inf  Not Available
          PCI\VEN_0E11&DEV_0046&SUBSYS_40910E11&REV_0
1\4&82820FC&0&2038
Compaq Virtual LUN  Yes       SYSTEM    5.2.3790.0
          10/1/2002 Compaq    scsidev.inf         Not
Available
          SCSI\OTHER&VEN_COMPAQ&PROD_SCSI_COMMUNICATE
&REV_CISS\5&3797EA60&0&000
Disk drive          Yes       DISKDRIVE 5.2.3790.0
          10/1/2002 (Standard disk drives)
          disk.inf  Not Available
          SCSI\DISK&VEN_HP&PROD_LOGICAL_VOLUME&REV_2.
26\5&3797EA60&0&040
Disk drive          Yes       DISKDRIVE 5.2.3790.0
          10/1/2002 (Standard disk drives)
          disk.inf  Not Available
          SCSI\DISK&VEN_HP&PROD_LOGICAL_VOLUME&REV_2.
26\5&3797EA60&0&050
System Interrupt Controller   Not Available
          UNKNOWN   Not Available       Not Available
          Not Available       Not Available       Not
Available
          PCI\VEN_1022&DEV_7451&SUBSYS_00000000&REV_0
1\3&20FEA912&0&39
PCI standard PCI-to-PCI bridge          Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available
          PCI\VEN_1022&DEV_7450&SUBSYS_00000000&REV_1
2\3&20FEA912&0&40
HP NC7782 Gigabit Server Adapter        Yes       NET
          7.80.0.0  6/19/2004 Hewlett-Packard Company
          oem1.inf  Not Available
          PCI\VEN_14E4&DEV_1648&SUBSYS_00D00E11&REV_1
0\4&24B9E852&0&3040
HP NC7782 Gigabit Server Adapter        Yes       NET
          7.80.0.0  6/19/2004 Hewlett-Packard Company
          oem1.inf  Not Available
          PCI\VEN_14E4&DEV_1648&SUBSYS_00D00E11&REV_1
0\4&24B9E852&0&3140
System Interrupt Controller   Not Available
          UNKNOWN   Not Available       Not Available
          Not Available       Not Available       Not
Available
          PCI\VEN_1022&DEV_7451&SUBSYS_00000000&REV_0
1\3&20FEA912&0&41
PCI standard host CPU bridge  Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          PCI\VEN_1022&DEV_1100&SUBSYS_00000000&REV_0
0\3&20FEA912&0&C0
PCI standard host CPU bridge  Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
```

```
          PCI\VEN_1022&DEV_1101&SUBSYS_00000000&REV_0
0\3&20FEA912&0&C1
PCI standard host CPU bridge  Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          PCI\VEN_1022&DEV_1102&SUBSYS_00000000&REV_0
0\3&20FEA912&0&C2
PCI standard host CPU bridge  Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          PCI\VEN_1022&DEV_1103&SUBSYS_00000000&REV_0
0\3&20FEA912&0&C3
PCI standard host CPU bridge  Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          PCI\VEN_1022&DEV_1100&SUBSYS_00000000&REV_0
0\3&20FEA912&0&C8
PCI standard host CPU bridge  Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          PCI\VEN_1022&DEV_1101&SUBSYS_00000000&REV_0
0\3&20FEA912&0&C9
PCI standard host CPU bridge  Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          PCI\VEN_1022&DEV_1102&SUBSYS_00000000&REV_0
0\3&20FEA912&0&CA
PCI standard host CPU bridge  Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          PCI\VEN_1022&DEV_1103&SUBSYS_00000000&REV_0
0\3&20FEA912&0&CB
PCI bus   Yes       SYSTEM    5.2.3790.0
          10/1/2002 (Standard system devices)
          machine.inf         Not Available
          ACPI\PNP0A03\8
PCI standard PCI-to-PCI bridge          Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available
          PCI\VEN_1022&DEV_7450&SUBSYS_00000000&REV_1
2\3&33B859B7&0&48
PCI standard PCI-to-PCI bridge          Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available
          PCI\VEN_1014&DEV_01A7&SUBSYS_00000000&REV_0
2\4&25F4D2AC&0&3848
Smart Array 6400 Controller (Non-Miniport)        No
          SCSIADAPTER         5.12.2.32 8/11/2004
          Hewlett-Packard     oem2.inf  Not Available
          PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_0
1\5&332338B7&0&203848
Smart Array Logical Volume    No        DISKDRIVE
          5.6.2.32  7/14/2004 Hewlett-Packard
          oem3.inf  Not Available
          HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\6&2
3D9AAE1&0&0000004000000000
Smart Array Logical Volume    No        DISKDRIVE
          5.6.2.32  7/14/2004 Hewlett-Packard
          oem3.inf  Not Available
          HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\6&2
3D9AAE1&0&0100004000000000
```

```
Smart Array 6400 Controller U320 Expansion Module
(Non-Miniport)      No        SCSIADAPTER
          5.12.2.32 8/11/2004 Hewlett-Packard
          oem2.inf  Not Available
          PCI\VEN_0E11&DEV_0046&SUBSYS_409D0E11&REV_0
1\5&332338B7&0&283848
Smart Array Logical Volume    No        DISKDRIVE
          5.6.2.32  7/14/2004 Hewlett-Packard
          oem3.inf  Not Available
          HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\6&1
FAF45BA&0&0000004000000000
PCI standard PCI-to-PCI bridge          Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available
          PCI\VEN_1014&DEV_01A7&SUBSYS_00000000&REV_0
2\4&25F4D2AC&0&4048
Smart Array 6400 Controller (Non-Miniport)        No
          SCSIADAPTER         5.12.2.32 8/11/2004
          Hewlett-Packard     oem2.inf  Not Available
          PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_0
1\5&590A27&0&204048
Smart Array Logical Volume    No        DISKDRIVE
          5.6.2.32  7/14/2004 Hewlett-Packard
          oem3.inf  Not Available
          HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\6&5
FB9C63&0&0000004000000000
Smart Array Logical Volume    No        DISKDRIVE
          5.6.2.32  7/14/2004 Hewlett-Packard
          oem3.inf  Not Available
          HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\6&5
FB9C63&0&0100004000000000
Smart Array 6400 Controller U320 Expansion Module
(Non-Miniport)      No        SCSIADAPTER
          5.12.2.32 8/11/2004 Hewlett-Packard
          oem2.inf  Not Available
          PCI\VEN_0E11&DEV_0046&SUBSYS_409D0E11&REV_0
1\5&590A27&0&284048
Smart Array Logical Volume    No        DISKDRIVE
          5.6.2.32  7/14/2004 Hewlett-Packard
          oem3.inf  Not Available
          HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\6&D
314D2&0&0000004000000000
System Interrupt Controller   Not Available
          UNKNOWN   Not Available       Not Available
          Not Available       Not Available       Not
Available
          PCI\VEN_1022&DEV_7451&SUBSYS_00000000&REV_0
1\3&33B859B7&0&49
PCI standard PCI-to-PCI bridge          Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available
          PCI\VEN_1022&DEV_7450&SUBSYS_00000000&REV_1
2\3&33B859B7&0&50
PCI standard PCI-to-PCI bridge          Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available
          PCI\VEN_1014&DEV_01A7&SUBSYS_00000000&REV_0
2\4&9630B56&0&4850
Smart Array 6400 Controller (Non-Miniport)        No
          SCSIADAPTER         5.12.2.32 8/11/2004
          Hewlett-Packard     oem2.inf  Not Available
          PCI\VEN_0E11&DEV_0046&SUBSYS_409C0E11&REV_0
1\5&FF12CDB&0&204850
Smart Array Logical Volume    No        DISKDRIVE
          5.6.2.32  7/14/2004 Hewlett-Packard
          oem3.inf  Not Available
          HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\6&8
E8795&0&0000004000000000
Smart Array Logical Volume    No        DISKDRIVE
          5.6.2.32  7/14/2004 Hewlett-Packard
          oem3.inf  Not Available
          HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\6&8
E8795&0&0100004000000000
Smart Array 6400 Controller U320 Expansion Module
(Non-Miniport)      No        SCSIADAPTER
          5.12.2.32 8/11/2004 Hewlett-Packard
          oem2.inf  Not Available
          PCI\VEN_0E11&DEV_0046&SUBSYS_409D0E11&REV_0
1\5&FF12CDB&0&284850
Smart Array Logical Volume    No        DISKDRIVE
          5.6.2.32  7/14/2004 Hewlett-Packard
          oem3.inf  Not Available
          HPQCISS\DISK&VEN_HP&PROD_LOGICAL_VOLUME\6&1
B3F3F8&1&0000004000000000
System Interrupt Controller   Not Available
          UNKNOWN   Not Available       Not Available
          Not Available       Not Available       Not
Available
          PCI\VEN_1022&DEV_7451&SUBSYS_00000000&REV_0
1\3&33B859B7&0&51
ACPI Fixed Feature Button     Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          ACPI\FIXEDBUTTON\2&DABA3FF&0
Logical Disk Manager          Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          ROOT\DMIO\0000
Volume Manager      Yes       SYSTEM    5.2.3790.0
          10/1/2002 (Standard system devices)
          machine.inf         Not Available
          ROOT\FTDISK\0000
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATURE5EA405
C7OFFSET10000LENGTH10D8500000
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATURE5EA405
C6OFFSET7E00LENGTH6E466E5E00
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATURED45EC1
BDOFFSET10000LENGTH28C5500000
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATURE5EA405
B8OFFSET10000LENGTH10D8500000
```

```
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATURE5EA405
BFOFFSET7E00LENGTH6E466E5E00
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATURE5EA405
BAOFFSET10000LENGTH10D8500000
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATURE5EA405
C5OFFSET10000LENGTH10D7E00000
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATURE5EA405
C4OFFSET7E00LENGTH6E466E5E00
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATURE5EA405
C0OFFSET10000LENGTH10D7E00000
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATURE263026
3OFFSET4000LENGTH87A3D0000
Generic volume      Yes       VOLUME    5.2.3790.0
          10/1/2002 Microsoft volume.inf          Not
Available
          STORAGE\VOLUME\1&30A96598&0&SIGNATUREEBB933
9EOFFSET10000LENGTH445D100000
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 Not Available       ROOT\LEGACY_BEEP\0000

CpuSpy Driver       Not Available       LEGACYDRIVER
          Not Available       Not Available       Not
Available Not Available       Not Available
          ROOT\LEGACY_CPUSPY\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

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
MultEvent Driver    Not Available       LEGACYDRIVER
          Not Available       Not Available       Not
Available Not Available       Not Available
          ROOT\LEGACY_MULTEVENT\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
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

RDPWD     Not Available       LEGACYDRIVER        Not
Available Not Available       Not Available       Not
Available Not Available       ROOT\LEGACY_RDPWD\0000

startdss  Not Available       LEGACYDRIVER        Not
Available Not Available       Not Available       Not
Available Not Available
          ROOT\LEGACY_STARTDSS\0000
TCP/IP Protocol Driver        Not Available
          LEGACYDRIVER        Not Available       Not
Available Not Available       Not Available       Not
Available ROOT\LEGACY_TCPIP\0000
TDTCP     Not Available       LEGACYDRIVER        Not
Available Not Available       Not Available       Not
Available Not Available       ROOT\LEGACY_TDTCP\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        Yes       MEDIA     5.2.3790.0
          10/1/2002 (Standard system devices)
          wave.inf  Not Available
          ROOT\MEDIA\MS_MMACM
Legacy Audio Drivers          Yes       MEDIA
          5.2.3790.0          10/1/2002 (Standard
system devices)     wave.inf  Not Available
          ROOT\MEDIA\MS_MMDRV
Media Control Devices         Yes       MEDIA
          5.2.3790.0          10/1/2002 (Standard
system devices)     wave.inf  Not Available
          ROOT\MEDIA\MS_MMMCI
Legacy Video Capture Devices  Yes       MEDIA
          5.2.3790.0          10/1/2002 (Standard
system devices)     wave.inf  Not Available
          ROOT\MEDIA\MS_MMVCD
Video Codecs        Yes       MEDIA     5.2.3790.0
          10/1/2002 (Standard system devices)
          wave.inf  Not Available
          ROOT\MEDIA\MS_MMVID
WAN Miniport (L2TP) Yes       NET       5.2.3790.0
          10/1/2002 Microsoft netrasa.inf         Not
Available ROOT\MS_L2TPMINIPORT\0000
WAN Miniport (IP)   Yes       NET       5.2.3790.0
          10/1/2002 Microsoft netrasa.inf         Not
Available ROOT\MS_NDISWANIP\0000
WAN Miniport (PPPOE)          Yes       NET
          5.2.3790.0          10/1/2002 Microsoft
          netrasa.inf         Not Available
          ROOT\MS_PPPOEMINIPORT\0000
WAN Miniport (PPTP) Yes       NET       5.2.3790.0
          10/1/2002 Microsoft netrasa.inf         Not
Available ROOT\MS_PPTPMINIPORT\0000
Direct Parallel     Yes       NET       5.2.3790.0
          10/1/2002 Microsoft netrasa.inf         Not
Available ROOT\MS_PTIMINIPORT\0000
```

```
Terminal Server Device Redirector       Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available       ROOT\RDPDR\0000
Terminal Server Keyboard Driver         Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available       ROOT\RDP_KBD\0000
Terminal Server Mouse Driver  Yes       SYSTEM
          5.2.3790.0          10/1/2002 (Standard
system devices)     machine.inf         Not Available
          ROOT\RDP_MOU\0000
Plug and Play Software Device Enumerator          Yes
          SYSTEM    5.2.3790.0          10/1/2002
          (Standard system devices)     machine.inf
          Not Available       ROOT\SYSTEM\0000
Microcode Update Device       Yes       SYSTEM
          5.2.3790.0          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%;%SystemR
oot%\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 37
Stepping 1, AuthenticAMD      <SYSTEM>
PROCESSOR_REVISION  2501      <SYSTEM>
NUMBER_OF_PROCESSORS          2         <SYSTEM>
ClusterLog          C:\WINDOWS\Cluster\cluster.log
          <SYSTEM>
PATHEXT
          .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF
;.WSH     <SYSTEM>
TEMP      %SystemRoot%\TEMP   <SYSTEM>
TMP       %SystemRoot%\TEMP   <SYSTEM>
TEMP      %USERPROFILE%\Local Settings\Temp       NT
AUTHORITY\SYSTEM
TMP       %USERPROFILE%\Local Settings\Temp       NT
AUTHORITY\SYSTEM
TEMP      %USERPROFILE%\Local Settings\Temp       NT
AUTHORITY\LOCAL SERVICE
TMP       %USERPROFILE%\Local Settings\Temp       NT
AUTHORITY\LOCAL SERVICE
TEMP      %USERPROFILE%\Local Settings\Temp       NT
AUTHORITY\NETWORK SERVICE
TMP       %USERPROFILE%\Local Settings\Temp       NT
AUTHORITY\NETWORK SERVICE
TEMP      %USERPROFILE%\Local Settings\Temp
          DL385\Administrator
TMP       %USERPROFILE%\Local Settings\Temp
          DL385\Administrator

[Print Jobs]
```

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

[Network Connections]

Local Name          Remote Name         Type
          Status    User Name

[Running Tasks]

Name      Path      Process ID          Priority  Min
Working Set         Max Working Set     Start Time
          Version   Size      File Date
system idle process Not Available       0         0
          Not Available       Not Available       Not
Available Not Available       Not Available       Not
Available
system    Not Available       4         8         0
          1413120   Not Available       Not Available
          Not Available       Not Available
smss.exe  Not Available       364       11
          204800    1413120   2/4/2005 9:43 AM    Not
Available Not Available       Not Available
csrss.exe Not Available       560       13        Not
Available Not Available       2/4/2005 9:43 AM    Not
Available Not Available       Not Available
winlogon.exe        c:\windows\system32\winlogon.exe
          584       13        204800    1413120
          2/4/2005 9:43 AM    5.2.3790.0
(srv03_rtm.030324-2048)       536.50 KB (549,376
bytes)    3/25/2003 6:00 AM
services.exe        c:\windows\system32\services.exe
          628       9         204800    1413120
          2/4/2005 9:43 AM    5.2.3790.0
(srv03_rtm.030324-2048)       102.00 KB (104,448
bytes)    3/25/2003 6:00 AM
lsass.exe c:\windows\system32\lsass.exe 640       9
          204800    1413120   2/4/2005 9:43 AM
          5.2.3790.0 (srv03_rtm.030324-2048)
          13.00 KB (13,312 bytes)       3/25/2003
6:00 AM
svchost.exe         c:\windows\system32\svchost.exe
          796       8         204800    1413120
          2/4/2005 9:43 AM    5.2.3790.0
(srv03_rtm.030324-2048)       13.00 KB (13,312 bytes)
          3/25/2003 6:00 AM
svchost.exe         c:\windows\system32\svchost.exe
          848       8         204800    1413120
          2/4/2005 9:43 AM    5.2.3790.0
(srv03_rtm.030324-2048)       13.00 KB (13,312 bytes)
          3/25/2003 6:00 AM
svchost.exe         Not Available       996       8
          Not Available       Not Available
          2/4/2005 9:43 AM    Not Available       Not
Available Not Available
svchost.exe         Not Available       1028      8
          Not Available       Not Available
          2/4/2005 9:43 AM    Not Available       Not
Available Not Available
```

```
svchost.exe         c:\windows\system32\svchost.exe
          1064      8         204800    1413120
          2/4/2005 9:43 AM    5.2.3790.0
(srv03_rtm.030324-2048)       13.00 KB (13,312 bytes)
          3/25/2003 6:00 AM
msdtc.exe Not Available       1136      8         Not
Available Not Available       2/4/2005 9:43 AM    Not
Available Not Available       Not Available
svchost.exe         c:\windows\system32\svchost.exe
          1264      8         204800    1413120
          2/4/2005 9:43 AM    5.2.3790.0
(srv03_rtm.030324-2048)       13.00 KB (13,312 bytes)
          3/25/2003 6:00 AM
wmiprvse.exe        Not Available       1604      8
          Not Available       Not Available
          2/4/2005 9:45 AM    Not Available       Not
Available Not Available
csrss.exe Not Available       1700      13        Not
Available Not Available       2/4/2005 9:48 AM    Not
Available Not Available       Not Available
winlogon.exe        c:\windows\system32\winlogon.exe
          1728      13        204800    1413120
          2/4/2005 9:48 AM    5.2.3790.0
(srv03_rtm.030324-2048)       536.50 KB (549,376
bytes)    3/25/2003 6:00 AM
rdpclip.exe         c:\windows\system32\rdpclip.exe
          1888      8         204800    1413120
          2/4/2005 9:48 AM    5.2.3790.0
(srv03_rtm.030324-2048)       53.00 KB (54,272 bytes)
          1/10/2005 12:11 AM
explorer.exe        c:\windows\explorer.exe
          1960      8         204800    1413120
          2/4/2005 9:48 AM    6.00.3790.0
(srv03_rtm.030324-2048)       1,008.50 KB (1,032,704
bytes)    3/25/2003 6:00 AM
sqlmangr.exe        c:\program files\microsoft sql
server\80\tools\binn\sqlmangr.exe       2024      8
          204800    1413120   2/4/2005 9:48 AM
          2000.080.0760.00    72.57 KB (74,308 bytes)
          1/27/2005 4:16 PM
logon.scr Not Available       980       4         Not
Available Not Available       2/4/2005 9:53 AM    Not
Available Not Available       Not Available
notepad.exe         c:\windows\system32\notepad.exe
          1928      8         204800    1413120
          2/4/2005 10:03 AM   5.2.3790.0
(srv03_rtm.030324-2048)       66.50 KB (68,096 bytes)
          3/25/2003 6:00 AM
mmc.exe   c:\windows\system32\mmc.exe   804       8
          204800    1413120   2/4/2005 1:41 PM
          5.2.3790.0 (srv03_rtm.030324-2048)
          762.50 KB (780,800 bytes)     3/25/2003
6:00 AM
helpsvc.exe
          c:\windows\pchealth\helpctr\binaries\helpsv
c.exe     352       8         204800    1413120
          2/4/2005 1:42 PM    5.2.3790.0
(srv03_rtm.030324-2048)       720.00 KB (737,280
bytes)    1/10/2005 12:14 AM
wmiprvse.exe        Not Available       1356      8
          Not Available       Not Available
          2/4/2005 1:42 PM    Not Available       Not
Available Not Available
```

```
helpctr.exe
          c:\windows\pchealth\helpctr\binaries\helpct
r.exe     1996      8         204800    1413120
          2/4/2005 1:42 PM    5.2.3790.0
(srv03_rtm.030324-2048)       764.00 KB (782,336
bytes)    1/10/2005 12:14 AM

[Loaded Modules]

Name      Version   Size      File Date Manufacturer
          Path
winlogon  5.2.3790.0 (srv03_rtm.030324-2048)
          536.50 KB (549,376 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\winlogon.exe
ntdll     5.2.3790.0 (srv03_rtm.030324-2048)
          722.50 KB (739,840 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ntdll.dll
kernel32  5.2.3790.0 (srv03_rtm.030324-2048)
          965.00 KB (988,160 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\kernel32.dll
msvcrt    7.0.3790.0 (srv03_rtm.030324-2048)
          319.50 KB (327,168 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msvcrt.dll
advapi32  5.2.3790.0 (srv03_rtm.030324-2048)
          559.50 KB (572,928 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\advapi32.dll
rpcrt4    5.2.3790.0 (srv03_rtm.030324-2048)
          643.50 KB (658,944 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\rpcrt4.dll
user32    5.2.3790.0 (srv03_rtm.030324-2048)
          562.00 KB (575,488 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\user32.dll
gdi32     5.2.3790.0 (srv03_rtm.030324-2048)
          263.00 KB (269,312 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\gdi32.dll
userenv   5.2.3790.0 (srv03_rtm.030324-2048)
          732.50 KB (750,080 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\userenv.dll
nddeapi   5.2.3790.0 (srv03_rtm.030324-2048)
          16.00 KB (16,384 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\nddeapi.dll
crypt32   5.131.3790.0 (srv03_rtm.030324-2048)
          598.00 KB (612,352 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\crypt32.dll
msasn1    5.2.3790.0 (srv03_rtm.030324-2048)
          58.00 KB (59,392 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msasn1.dll
secur32   5.2.3790.0 (srv03_rtm.030324-2048)
          63.00 KB (64,512 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\secur32.dll
```

```
winsta    5.2.3790.0 (srv03_rtm.030324-2048)
          51.00 KB (52,224 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\winsta.dll
netapi32  5.2.3790.0 (srv03_rtm.030324-2048)
          317.00 KB (324,608 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\netapi32.dll
profmap   5.2.3790.0 (srv03_rtm.030324-2048)
          22.00 KB (22,528 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\profmap.dll
regapi    5.2.3790.0 (srv03_rtm.030324-2048)
          48.50 KB (49,664 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\regapi.dll
ws2_32    5.2.3790.0 (srv03_rtm.030324-2048)
          87.50 KB (89,600 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ws2_32.dll
ws2help   5.2.3790.0 (srv03_rtm.030324-2048)
          19.50 KB (19,968 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ws2help.dll
psapi     5.2.3790.0 (srv03_rtm.030324-2048)
          21.50 KB (22,016 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\psapi.dll
version   5.2.3790.0 (srv03_rtm.030324-2048)
          17.00 KB (17,408 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\version.dll
setupapi  5.2.3790.0 (srv03_rtm.030324-2048)
          1,014.50 KB (1,038,848 bytes) 3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\setupapi.dll
msgina    5.2.3790.0 (srv03_rtm.030324-2048)
          1.14 MB (1,191,936 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msgina.dll
shsvcs    6.00.3790.0 (srv03_rtm.030324-2048)
          121.50 KB (124,416 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\shsvcs.dll
shlwapi   6.00.3790.0 (srv03_rtm.030324-2048)
          281.00 KB (287,744 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\shlwapi.dll
sfc       5.2.3790.0 (srv03_rtm.030324-2048)
          4.50 KB (4,608 bytes)         3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\sfc.dll
sfc_os    5.2.3790.0 (srv03_rtm.030324-2048)
          133.00 KB (136,192 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\sfc_os.dll
wintrust  5.131.3790.0 (srv03_rtm.030324-2048)
          161.50 KB (165,376 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wintrust.dll
ole32     5.2.3790.0 (srv03_rtm.030324-2048)
          1.13 MB (1,187,328 bytes)     3/25/2003
```

```
6:00 AM   Microsoft Corporation
          c:\windows\system32\ole32.dll
imagehlp  5.2.3790.0 (srv03_rtm.030324-2048)
          142.50 KB (145,920 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\imagehlp.dll
comctl32  6.0 (srv03_rtm.030324-2048)   907.00 KB
(928,768 bytes)     10/27/2004 7:26 PM  Microsoft
Corporation
          c:\windows\winsxs\x86_microsoft.windows.com
mon-controls_6595b64144ccf1df_6.0.100.0_x-
ww_8417450b\comctl32.dll
winscard  5.2.3790.0 (srv03_rtm.030324-2048)
          98.50 KB (100,864 bytes)      3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\winscard.dll
wtsapi32  5.2.3790.0 (srv03_rtm.030324-2048)
          17.50 KB (17,920 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wtsapi32.dll
winmm     5.2.3790.0 (srv03_rtm.030324-2048)
          166.00 KB (169,984 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\winmm.dll
sxs       5.2.3790.0 (srv03_rtm.030324-2048)
          733.00 KB (750,592 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\sxs.dll
shell32   6.00.3790.0 (srv03_rtm.030324-2048)
          7.79 MB (8,166,400 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\shell32.dll
wldap32   5.2.3790.0 (srv03_rtm.030324-2048)
          158.00 KB (161,792 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wldap32.dll
rsaenh    5.2.3790.0 (srv03_rtm.030324-2048)
          176.83 KB (181,072 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\rsaenh.dll
cscdll    5.2.3790.0 (srv03_rtm.030324-2048)
          99.00 KB (101,376 bytes)      3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\cscdll.dll
wlnotify  5.2.3790.0 (srv03_rtm.030324-2048)
          87.50 KB (89,600 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wlnotify.dll
winspool  5.2.3790.0 (srv03_rtm.030324-2048)
          140.00 KB (143,360 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\winspool.drv
mpr       5.2.3790.0 (srv03_rtm.030324-2048)
          56.00 KB (57,344 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mpr.dll
comctl32  5.82 (srv03_rtm.030324-2048)  561.00 KB
(574,464 bytes)     10/27/2004 7:26 PM  Microsoft
Corporation
          c:\windows\winsxs\x86_microsoft.windows.com
mon-controls_6595b64144ccf1df_5.82.0.0_x-
ww_8a69ba05\comctl32.dll
```

```
uxtheme   6.00.3790.0 (srv03_rtm.030324-2048)
          196.00 KB (200,704 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\uxtheme.dll
clbcatq   2001.12.4720.0 (srv03_rtm.030324-2048)
          481.00 KB (492,544 bytes)     1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\clbcatq.dll
oleaut32  5.2.3790.0          486.00 KB (497,664
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\oleaut32.dll
comres    2001.12.4720.0 (srv03_rtm.030324-2048)
          778.00 KB (796,672 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\comres.dll
wbemprox  5.2.3790.0 (srv03_rtm.030324-2048)
          17.50 KB (17,920 bytes)       1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\wbemprox.dll
wbemcomn  5.2.3790.0 (srv03_rtm.030324-2048)
          211.50 KB (216,576 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wbem\wbemcomn.dll
wbemsvc   5.2.3790.0 (srv03_rtm.030324-2048)
          42.50 KB (43,520 bytes)       1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\wbemsvc.dll
fastprox  5.2.3790.0 (srv03_rtm.030324-2048)
          443.00 KB (453,632 bytes)     1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\fastprox.dll
msvcp60   6.05.2144.0         388.00 KB (397,312
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\msvcp60.dll
ntdsapi   5.2.3790.0 (srv03_rtm.030324-2048)
          76.00 KB (77,824 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ntdsapi.dll
dnsapi    5.2.3790.0 (srv03_rtm.030324-2048)
          147.50 KB (151,040 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\dnsapi.dll
services  5.2.3790.0 (srv03_rtm.030324-2048)
          102.00 KB (104,448 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\services.exe
scesrv    5.2.3790.0 (srv03_rtm.030324-2048)
          316.50 KB (324,096 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\scesrv.dll
authz     5.2.3790.0 (srv03_rtm.030324-2048)
          67.00 KB (68,608 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\authz.dll
umpnpmgr  5.2.3790.0 (srv03_rtm.030324-2048)
          121.50 KB (124,416 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\umpnpmgr.dll
ncobjapi  5.2.3790.0 (srv03_rtm.030324-2048)
          34.50 KB (35,328 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ncobjapi.dll
```

```
eventlog  5.2.3790.0 (srv03_rtm.030324-2048)
          60.50 KB (61,952 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\eventlog.dll
lsass     5.2.3790.0 (srv03_rtm.030324-2048)
          13.00 KB (13,312 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\lsass.exe
lsasrv    5.2.3790.0 (srv03_rtm.030324-2048)
          780.50 KB (799,232 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\lsasrv.dll
samsrv    5.2.3790.0 (srv03_rtm.030324-2048)
          452.00 KB (462,848 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\samsrv.dll
cryptdll  5.2.3790.0 (srv03_rtm.030324-2048)
          34.00 KB (34,816 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\cryptdll.dll
samlib    5.2.3790.0 (srv03_rtm.030324-2048)
          49.00 KB (50,176 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\samlib.dll
msprivs   5.2.3790.0 (srv03_rtm.030324-2048)
          46.50 KB (47,616 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msprivs.dll
kerberos  5.2.3790.0 (srv03_rtm.030324-2048)
          332.50 KB (340,480 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\kerberos.dll
msv1_0    5.2.3790.0 (srv03_rtm.030324-2048)
          127.00 KB (130,048 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msv1_0.dll
netlogon  5.2.3790.0 (srv03_rtm.030324-2048)
          409.00 KB (418,816 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\netlogon.dll
w32time   5.2.3790.0 (srv03_rtm.030324-2048)
          216.00 KB (221,184 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\w32time.dll
iphlpapi  5.2.3790.0 (srv03_rtm.030324-2048)
          82.50 KB (84,480 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\iphlpapi.dll
schannel  5.2.3790.0 (srv03_rtm.030324-2048)
          149.50 KB (153,088 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\schannel.dll
wdigest   5.2.3790.0 (srv03_rtm.030324-2048)
          61.00 KB (62,464 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wdigest.dll
rassfm    5.2.3790.0 (srv03_rtm.030324-2048)
          20.50 KB (20,992 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\rassfm.dll
kdcsvc    5.2.3790.0 (srv03_rtm.030324-2048)
          221.00 KB (226,304 bytes)     3/25/2003
```

```
6:00 AM   Microsoft Corporation
          c:\windows\system32\kdcsvc.dll
ntdsa     5.2.3790.0 (srv03_rtm.030324-2048)
          1.45 MB (1,520,640 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ntdsa.dll
ntdsatq   5.2.3790.0 (srv03_rtm.030324-2048)
          32.00 KB (32,768 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ntdsatq.dll
mswsock   5.2.3790.0 (srv03_rtm.030324-2048)
          254.00 KB (260,096 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mswsock.dll
esent     5.2.3790.0 (srv03_rtm.030324-2048)
          1.01 MB (1,056,256 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\esent.dll
scecli    5.2.3790.0 (srv03_rtm.030324-2048)
          179.50 KB (183,808 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\scecli.dll
wshtcpip  5.2.3790.0 (srv03_rtm.030324-2048)
          18.00 KB (18,432 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wshtcpip.dll
ipsecsvc  5.2.3790.0 (srv03_rtm.030324-2048)
          162.50 KB (166,400 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ipsecsvc.dll
oakley    5.2.3790.0 (srv03_rtm.030324-2048)
          325.50 KB (333,312 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\oakley.dll
winipsec  5.2.3790.0 (srv03_rtm.030324-2048)
          34.50 KB (35,328 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\winipsec.dll
pstorsvc  5.2.3790.0 (srv03_rtm.030324-2048)
          24.00 KB (24,576 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\pstorsvc.dll
psbase    5.2.3790.0 (srv03_rtm.030324-2048)
          81.00 KB (82,944 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\psbase.dll
dssenh    5.2.3790.0 (srv03_rtm.030324-2048)
          131.33 KB (134,480 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\dssenh.dll
wlbsctrl  5.2.3790.0 (srv03_rtm.030324-2048)
          78.00 KB (79,872 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wlbsctrl.dll
svchost   5.2.3790.0 (srv03_rtm.030324-2048)
          13.00 KB (13,312 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\svchost.exe
rpcss     5.2.3790.0 (srv03_rtm.030324-2048)
          276.50 KB (283,136 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\rpcss.dll
```

```
ntmarta   5.2.3790.0 (srv03_rtm.030324-2048)
          114.00 KB (116,736 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ntmarta.dll
termsrv   5.2.3790.0 (srv03_rtm.030324-2048)
          216.50 KB (221,696 bytes)     1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\termsrv.dll
icaapi    5.2.3790.0 (srv03_rtm.030324-2048)
          10.50 KB (10,752 bytes)       1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\icaapi.dll
mstlsapi  5.2.3790.0 (srv03_rtm.030324-2048)
          104.50 KB (107,008 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mstlsapi.dll
activeds  5.2.3790.0 (srv03_rtm.030324-2048)
          189.00 KB (193,536 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\activeds.dll
adsldpc   5.2.3790.0 (srv03_rtm.030324-2048)
          142.50 KB (145,920 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\adsldpc.dll
credui    5.2.3790.0 (srv03_rtm.030324-2048)
          159.00 KB (162,816 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\credui.dll
atl       3.05.2283 83.00 KB (84,992 bytes)
          3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\atl.dll
rdpwsx    5.2.3790.0 (srv03_rtm.030324-2048)
          80.13 KB (82,056 bytes)       1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\rdpwsx.dll
wkssvc    5.2.3790.0 (srv03_rtm.030324-2048)
          125.00 KB (128,000 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wkssvc.dll
wiarpc    5.2.3790.0 (srv03_rtm.030324-2048)
          30.00 KB (30,720 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wiarpc.dll
cryptsvc  5.2.3790.0 (srv03_rtm.030324-2048)
          51.00 KB (52,224 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\cryptsvc.dll
certcli   5.2.3790.0 (srv03_rtm.030324-2048)
          228.00 KB (233,472 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\certcli.dll
vssapi    5.2.3790.0 (srv03_rtm.030324-2048)
          528.00 KB (540,672 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\vssapi.dll
dmserver  5.2.3790.0 (srv03_rtm.030324-2048)
          24.00 KB (24,576 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\dmserver.dll
es        2001.12.4720.0 (srv03_rtm.030324-2048)
          221.50 KB (226,816 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\es.dll
```

```
srvsvc    5.2.3790.0 (srv03_rtm.030324-2048)
          89.00 KB (91,136 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\srvsvc.dll
wmisvc    5.2.3790.0 (srv03_rtm.030324-2048)
          131.00 KB (134,144 bytes)     1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\wmisvc.dll
sens      5.2.3790.0 (srv03_rtm.030324-2048)
          35.50 KB (36,352 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\sens.dll
winrnr    5.2.3790.0 (srv03_rtm.030324-2048)
          15.00 KB (15,360 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\winrnr.dll
comsvcs   2001.12.4720.0 (srv03_rtm.030324-2048)
          1.14 MB (1,199,616 bytes)     1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\comsvcs.dll
browser   5.2.3790.0 (srv03_rtm.030324-2048)
          70.50 KB (72,192 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\browser.dll
netrap    5.2.3790.0 (srv03_rtm.030324-2048)
          11.50 KB (11,776 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\netrap.dll
rasadhlp  5.2.3790.0 (srv03_rtm.030324-2048)
          6.50 KB (6,656 bytes)         3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\rasadhlp.dll
wbemcore  5.2.3790.0 (srv03_rtm.030324-2048)
          457.00 KB (467,968 bytes)     1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\wbemcore.dll
esscli    5.2.3790.0 (srv03_rtm.030324-2048)
          235.50 KB (241,152 bytes)     1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\esscli.dll
wmiutils  5.2.3790.0 (srv03_rtm.030324-2048)
          90.50 KB (92,672 bytes)       1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\wmiutils.dll
repdrvfs  5.2.3790.0 (srv03_rtm.030324-2048)
          165.00 KB (168,960 bytes)     1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\repdrvfs.dll
wmiprvsd  5.2.3790.0 (srv03_rtm.030324-2048)
          405.50 KB (415,232 bytes)     1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\wmiprvsd.dll
wbemess   5.2.3790.0 (srv03_rtm.030324-2048)
          256.50 KB (262,656 bytes)     1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\wbemess.dll
ncprov    5.2.3790.0 (srv03_rtm.030324-2048)
          43.00 KB (44,032 bytes)       1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\ncprov.dll
netman    5.2.3790.0 (srv03_rtm.030324-2048)
          209.00 KB (214,016 bytes)     3/25/2003
```

```
6:00 AM   Microsoft Corporation
          c:\windows\system32\netman.dll
mprapi    5.2.3790.0 (srv03_rtm.030324-2048)
          81.00 KB (82,944 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mprapi.dll
rtutils   5.2.3790.0 (srv03_rtm.030324-2048)
          32.00 KB (32,768 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\rtutils.dll
rasapi32  5.2.3790.0 (srv03_rtm.030324-2048)
          227.50 KB (232,960 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\rasapi32.dll
rasman    5.2.3790.0 (srv03_rtm.030324-2048)
          56.50 KB (57,856 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\rasman.dll
tapi32    5.2.3790.0 (srv03_rtm.030324-2048)
          175.00 KB (179,200 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\tapi32.dll
wzcsvc    5.2.3790.0 (srv03_rtm.030324-2048)
          272.50 KB (279,040 bytes)     3/25/2003
6:15 AM   Microsoft Corporation
          c:\windows\system32\wzcsvc.dll
wmi       5.2.3790.0 (srv03_rtm.030324-2048)
          6.50 KB (6,656 bytes)         3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wmi.dll
dhcpcsvc  5.2.3790.0 (srv03_rtm.030324-2048)
          101.50 KB (103,936 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\dhcpcsvc.dll
wzcsapi   5.2.3790.0 (srv03_rtm.030324-2048)
          24.50 KB (25,088 bytes)       3/25/2003
6:15 AM   Microsoft Corporation
          c:\windows\system32\wzcsapi.dll
netshell  5.2.3790.0 (srv03_rtm.030324-2048)
          1.67 MB (1,747,456 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\netshell.dll
clusapi   5.2.3790.0 (srv03_rtm.030324-2048)
          56.00 KB (57,344 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\clusapi.dll
hnetcfg   5.2.3790.0 (srv03_rtm.030324-2048)
          243.50 KB (249,344 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\hnetcfg.dll
wininet   6.00.3790.0 (srv03_rtm.030324-2048)
          609.00 KB (623,616 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wininet.dll
rasdlg    5.2.3790.0 (srv03_rtm.030324-2048)
          642.00 KB (657,408 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\rasdlg.dll
ntlsapi   5.2.3790.0 (srv03_rtm.030324-2048)
          8.00 KB (8,192 bytes)         3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ntlsapi.dll
```

```
pchsvc    5.2.3790.0 (srv03_rtm.030324-2048)
          31.50 KB (32,256 bytes)       1/10/2005
12:14 AM  Microsoft Corporation
          c:\windows\pchealth\helpctr\binaries\pchsvc
.dll
wbemcons  5.2.3790.0 (srv03_rtm.030324-2048)
          69.00 KB (70,656 bytes)       1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\wbem\wbemcons.dll
ersvc     5.2.3790.0 (srv03_rtm.030324-2048)
          22.00 KB (22,528 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ersvc.dll
rdpsnd    5.2.3790.0 (srv03_rtm.030324-2048)
          18.00 KB (18,432 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\rdpsnd.dll
scredir   5.2.3790.0 (srv03_rtm.030324-2048)
          27.00 KB (27,648 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\scredir.dll
cscui     5.2.3790.0 (srv03_rtm.030324-2048)
          305.00 KB (312,320 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\cscui.dll
msacm32   5.2.3790.0 (srv03_rtm.030324-2048)
          21.00 KB (21,504 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msacm32.drv
msacm32   5.2.3790.0 (srv03_rtm.030324-2048)
          67.50 KB (69,120 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msacm32.dll
imaadp32  5.2.3790.0 (srv03_rtm.030324-2048)
          15.50 KB (15,872 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\imaadp32.acm
msadp32   5.2.3790.0 (srv03_rtm.030324-2048)
          14.50 KB (14,848 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msadp32.acm
msg711    5.2.3790.0 (srv03_rtm.030324-2048)
          10.00 KB (10,240 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msg711.acm
msgsm32   5.2.3790.0 (srv03_rtm.030324-2048)
          20.50 KB (20,992 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msgsm32.acm
tssoft32  1.01      9.50 KB (9,728 bytes)
          3/25/2003 6:00 AM   DSP GROUP, INC.
          c:\windows\system32\tssoft32.acm
tsd32     1.03      16.50 KB (16,896 bytes)
          3/25/2003 6:00 AM   DSP GROUP, INC.
          c:\windows\system32\tsd32.dll
msg723    4.4.4000  116.00 KB (118,784 bytes)
          1/10/2005 12:14 AM  Microsoft Corporation
          c:\windows\system32\msg723.acm
msaud32   8.00.00.4487        288.00 KB (294,912
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\msaud32.acm
```

```
sl_anet   3.02      84.00 KB (86,016 bytes)
          3/25/2003 6:00 AM   Sipro Lab Telecom Inc.
          c:\windows\system32\sl_anet.acm
l3codeca  1, 9, 0, 0305       284.00 KB (290,816
bytes)    3/25/2003 6:00 AM   Fraunhofer Institut
Integrierte Schaltungen IIS
          c:\windows\system32\l3codeca.acm
rdpclip   5.2.3790.0 (srv03_rtm.030324-2048)
          53.00 KB (54,272 bytes)       1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\rdpclip.exe
wsock32   5.2.3790.0 (srv03_rtm.030324-2048)
          22.00 KB (22,528 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\wsock32.dll
explorer  6.00.3790.0 (srv03_rtm.030324-2048)
          1,008.50 KB (1,032,704 bytes) 3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\explorer.exe
browseui  6.00.3790.0 (srv03_rtm.030324-2048)
          1.01 MB (1,057,280 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\browseui.dll
shdocvw   6.00.3790.0 (srv03_rtm.030324-2048)
          1.33 MB (1,393,664 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\shdocvw.dll
apphelp   5.2.3790.0 (srv03_rtm.030324-2048)
          122.00 KB (124,928 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\apphelp.dll
themeui   6.00.3790.0 (srv03_rtm.030324-2048)
          360.50 KB (369,152 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\themeui.dll
msimg32   5.2.3790.0 (srv03_rtm.030324-2048)
          4.50 KB (4,608 bytes)         3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msimg32.dll
linkinfo  5.2.3790.0 (srv03_rtm.030324-2048)
          16.50 KB (16,896 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\linkinfo.dll
ntshrui   6.00.3790.0 (srv03_rtm.030324-2048)
          136.00 KB (139,264 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ntshrui.dll
urlmon    6.00.3790.0 (srv03_rtm.030324-2048)
          501.50 KB (513,536 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\urlmon.dll
webcheck  6.00.3790.0 (srv03_rtm.030324-2048)
          261.50 KB (267,776 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\webcheck.dll
stobject  5.2.3790.0 (srv03_rtm.030324-2048)
          117.50 KB (120,320 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\stobject.dll
batmeter  6.00.3790.0 (srv03_rtm.030324-2048)
          28.50 KB (29,184 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\batmeter.dll
```

```
powrprof  6.00.3790.0 (srv03_rtm.030324-2048)
          14.50 KB (14,848 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\powrprof.dll
printui   5.2.3790.0 (srv03_rtm.030324-2048)
          536.50 KB (549,376 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\printui.dll
cfgmgr32  5.2.3790.0 (srv03_rtm.030324-2048)
          17.50 KB (17,920 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\cfgmgr32.dll
drprov    5.2.3790.0 (srv03_rtm.030324-2048)
          12.50 KB (12,800 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\drprov.dll
ntlanman  5.2.3790.0 (srv03_rtm.030324-2048)
          41.00 KB (41,984 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\ntlanman.dll
netui0    5.2.3790.0 (srv03_rtm.030324-2048)
          75.50 KB (77,312 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\netui0.dll
netui1    5.2.3790.0 (srv03_rtm.030324-2048)
          184.00 KB (188,416 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\netui1.dll
davclnt   5.2.3790.0 (srv03_rtm.030324-2048)
          23.50 KB (24,064 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\davclnt.dll
browselc  6.00.3790.0 (srv03_rtm.030324-2048)
          62.00 KB (63,488 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\browselc.dll
shdoclc   6.00.3790.0 (srv03_rtm.030324-2048)
          588.50 KB (602,624 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\shdoclc.dll
mprui     5.2.3790.0 (srv03_rtm.030324-2048)
          49.00 KB (50,176 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mprui.dll
netui2    5.2.3790.0 (srv03_rtm.030324-2048)
          309.50 KB (316,928 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\netui2.dll
comdlg32  6.00.3790.0 (srv03_rtm.030324-2048)
          261.00 KB (267,264 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\comdlg32.dll
netmsg    5.2.3790.0 (srv03_rtm.030324-2048)
          178.00 KB (182,272 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\netmsg.dll
netplwiz  5.2.3790.0 (srv03_rtm.030324-2048)
          843.00 KB (863,232 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\netplwiz.dll
zipfldr   6.00.3790.0 (srv03_rtm.030324-2048)
          316.00 KB (323,584 bytes)     3/25/2003
```

```
6:00 AM   Microsoft Corporation
          c:\windows\system32\zipfldr.dll
actxprxy  6.00.3790.0 (srv03_rtm.030324-2048)
          95.00 KB (97,280 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\actxprxy.dll
mydocs    6.00.3790.0 (srv03_rtm.030324-2048)
          88.00 KB (90,112 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mydocs.dll
sqlmangr  2000.080.0760.00    72.57 KB (74,308 bytes)
          1/27/2005 4:16 PM   Microsoft Corporation
          c:\program files\microsoft sql
server\80\tools\binn\sqlmangr.exe
sqlunirl  2000.080.0728.00    176.56 KB (180,800
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\sqlunirl.dll
w95scm    2000.080.0760.00    48.56 KB (49,728 bytes)
          1/27/2005 4:16 PM   Microsoft Corporation
          c:\program files\microsoft sql
server\80\tools\binn\w95scm.dll
odbc32    3.525.1022.0 (srv03_rtm.030324-2048)
          232.00 KB (237,568 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\odbc32.dll
sqlsvc    2000.080.0760.00    92.56 KB (94,784 bytes)
          1/27/2005 4:16 PM   Microsoft Corporation
          c:\program files\microsoft sql
server\80\tools\binn\sqlsvc.dll
odbcbcp   2000.085.1022.00 (srv03_rtm.030324-2048)
          24.00 KB (24,576 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\odbcbcp.dll
sqlresld  2000.080.0382.00    28.56 KB (29,248 bytes)
          1/27/2005 4:16 PM   Microsoft Corporation
          c:\program files\microsoft sql
server\80\tools\binn\sqlresld.dll
odbcint   3.525.1022.0 (srv03_rtm.030324-2048)
          92.00 KB (94,208 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\odbcint.dll
resutils  5.2.3790.0 (srv03_rtm.030324-2048)
          59.00 KB (60,416 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\resutils.dll
mfc42u    6.05.3014.0         960.00 KB (983,040
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\mfc42u.dll
sqlsvc    2000.080.0194.00    24.00 KB (24,576 bytes)
          1/27/2005 4:16 PM   Microsoft Corporation
          c:\program files\microsoft sql
server\80\tools\binn\resources\1033\sqlsvc.rll
sqlmangr  2000.080.0194.00    96.00 KB (98,304 bytes)
          1/27/2005 4:16 PM   Microsoft Corporation
          c:\program files\microsoft sql
server\80\tools\binn\resources\1033\sqlmangr.rll
notepad   5.2.3790.0 (srv03_rtm.030324-2048)
          66.50 KB (68,096 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\notepad.exe
mmc       5.2.3790.0 (srv03_rtm.030324-2048)
          762.50 KB (780,800 bytes)     3/25/2003
```

```
6:00 AM   Microsoft Corporation
          c:\windows\system32\mmc.exe
oleacc    4.2.5406.0 (srv03_rtm.030324-2048)
          171.00 KB (175,104 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\oleacc.dll
mmcbase   5.2.3790.0 (srv03_rtm.030324-2048)
          70.50 KB (72,192 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mmcbase.dll
mmcndmgr  5.2.3790.0 (srv03_rtm.030324-2048)
          1.13 MB (1,182,720 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mmcndmgr.dll
msxml3    8.40.9419.0         1.28 MB (1,337,344
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\msxml3.dll
filemgmt  5.2.3790.0 (srv03_rtm.030324-2048)
          327.50 KB (335,360 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\filemgmt.dll
mshtml    6.00.3790.0 (srv03_rtm.030324-2048)
          2.78 MB (2,916,352 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mshtml.dll
mlang     6.00.3790.0 (srv03_rtm.030324-2048)
          570.00 KB (583,680 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mlang.dll
msimtf    5.2.3790.0 (srv03_rtm.030324-2048)
          149.00 KB (152,576 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msimtf.dll
msctf     5.2.3790.0 (srv03_rtm.030324-2048)
          287.00 KB (293,888 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\msctf.dll
jscript   5.6.0.8515          436.00 KB (446,464
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\jscript.dll
msls31    3.10.349.0          147.00 KB (150,528
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\msls31.dll
imm32     5.2.3790.0 (srv03_rtm.030324-2048)
          105.50 KB (108,032 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\imm32.dll
mshtmled  6.00.3790.0 (srv03_rtm.030324-2048)
          443.50 KB (454,144 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\mshtmled.dll
imgutil   5.2.3790.0 (srv03_rtm.030324-2048)
          35.00 KB (35,840 bytes)       3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\imgutil.dll
snmpsnap  5.2.3790.0 (srv03_rtm.030324-2048)
          173.50 KB (177,664 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\snmpsnap.dll
servdeps  5.2.3790.0 (srv03_rtm.030324-2048)
          53.00 KB (54,272 bytes)       1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\servdeps.dll
```

```
mmfutil   5.2.3790.0 (srv03_rtm.030324-2048)
          17.00 KB (17,408 bytes)       1/10/2005
12:11 AM  Microsoft Corporation
          c:\windows\system32\mmfutil.dll
helpsvc   5.2.3790.0 (srv03_rtm.030324-2048)
          720.00 KB (737,280 bytes)     1/10/2005
12:14 AM  Microsoft Corporation
          c:\windows\pchealth\helpctr\binaries\helpsv
c.exe
hcappres  5.2.3790.0 (srv03_rtm.030324-2048)
          6.50 KB (6,656 bytes)         1/10/2005
12:14 AM  Microsoft Corporation
          c:\windows\pchealth\helpctr\binaries\hcappr
es.dll
itss      5.2.3790.0 (srv03_rtm.030324-2048)
          119.50 KB (122,368 bytes)     3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\itss.dll
helpctr   5.2.3790.0 (srv03_rtm.030324-2048)
          764.00 KB (782,336 bytes)     1/10/2005
12:14 AM  Microsoft Corporation
          c:\windows\pchealth\helpctr\binaries\helpct
r.exe
pchshell  5.2.3790.0 (srv03_rtm.030324-2048)
          100.50 KB (102,912 bytes)     1/10/2005
12:14 AM  Microsoft Corporation
          c:\windows\pchealth\helpctr\binaries\pchshe
ll.dll
vbscript  5.6.0.8515          404.00 KB (413,696
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\vbscript.dll
mfc42     6.05.3014.0         960.00 KB (983,040
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\mfc42.dll
msinfo    5.2.3790.0 (srv03_rtm.030324-2048)
          358.50 KB (367,104 bytes)     1/10/2005
12:14 AM  Microsoft Corporation
          c:\windows\pchealth\helpctr\binaries\msinfo
.dll
riched32  5.2.3790.0 (srv03_rtm.030324-2048)
          3.50 KB (3,584 bytes)         3/25/2003
6:00 AM   Microsoft Corporation
          c:\windows\system32\riched32.dll
riched20  5.31.23.1218        406.00 KB (415,744
bytes)    3/25/2003 6:00 AM   Microsoft Corporation
          c:\windows\system32\riched20.dll

[Services]

Display Name        Name      State     Start Mode
          Service Type        Path      Error Control
          Start Name          Tag ID
Alerter   Alerter   Stopped   Disabled  Share Process
          c:\windows\system32\svchost.exe -k
localservice        Normal    NT
AUTHORITY\LocalService        0
Application Layer Gateway Service       ALG
          Stopped   Manual    Own Process
          c:\windows\system32\alg.exe   Normal    NT
AUTHORITY\LocalService        0
Application Management        AppMgmt   Stopped
          Manual    Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Windows Audio       AudioSrv  Stopped   Disabled
          Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Background Intelligent Transfer Service BITS
          Stopped   Manual    Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Computer Browser    Browser   Running   Auto
          Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Indexing Service    CiSvc     Stopped   Disabled
          Share Process
          c:\windows\system32\cisvc.exe Normal
          LocalSystem         0
ClipBook  ClipSrv   Stopped   Disabled  Own Process
          c:\windows\system32\clipsrv.exe
          Normal    LocalSystem         0
COM+ System Application       COMSysApp Stopped
          Manual    Own Process
          c:\windows\system32\dllhost.exe
/processid:{02d4b3f1-fd88-11d1-960d-00805fc79235}
          Normal    LocalSystem         0
Cryptographic Services        CryptSvc  Running
          Auto      Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Distributed File System       Dfs       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  Running   Auto
          Share Process
          c:\windows\system32\svchost.exe -k
networkservice      Normal    NT
AUTHORITY\NetworkService      0
Error Reporting Service       ERSvc     Running
          Auto      Share Process
          c:\windows\system32\svchost.exe -k winerr
          Ignore    LocalSystem         0
Event Log Eventlog  Running   Auto      Share Process
          c:\windows\system32\services.exe
          Normal    LocalSystem         0
COM+ Event System   EventSystem         Running
          Manual    Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Help and Support    helpsvc   Running   Auto
          Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Human Interface Device Access HidServ   Stopped
          Disabled  Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
HTTP SSL  HTTPFilter          Stopped   Manual
          Share Process
          c:\windows\system32\lsass.exe Normal
          LocalSystem         0
IMAPI CD-Burning COM Service  ImapiService
          Stopped   Disabled  Own Process
          c:\windows\system32\imapi.exe Normal
          LocalSystem         0
Intersite Messaging IsmServ   Stopped   Disabled  Own
Process   c:\windows\system32\ismserv.exe
          Normal    LocalSystem         0
Kerberos Key Distribution Center        kdc
          Stopped   Disabled  Share Process
          c:\windows\system32\lsass.exe Normal
          LocalSystem         0
Server    lanmanserver        Running   Auto
          Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Workstation         lanmanworkstation   Running
          Auto      Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
License Logging     LicenseService      Stopped
          Disabled  Own Process
          c:\windows\system32\llssrv.exe
          Normal    NT AUTHORITY\NetworkService   0

TCP/IP NetBIOS Helper         LmHosts   Running
          Auto      Share Process
          c:\windows\system32\svchost.exe -k
localservice        Normal    NT
AUTHORITY\LocalService        0
Messenger Messenger Stopped   Disabled  Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
NetMeeting Remote Desktop Sharing       mnmsrvc
          Stopped   Disabled  Own Process
          c:\windows\system32\mnmsrvc.exe
          Normal    LocalSystem         0
Distributed Transaction Coordinator     MSDTC
          Running   Auto      Own Process
          c:\windows\system32\msdtc.exe Normal    NT
AUTHORITY\NetworkService      0
Windows Installer   MSIServer Stopped   Manual
          Share Process
          c:\windows\system32\msiexec.exe /v
          Normal    LocalSystem         0
MSSQLSERVER         MSSQLSERVER         Stopped
          Manual    Own Process
          c:\sqlser~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
          Running   Manual    Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
File Replication    NtFrs     Stopped   Manual    Own
Process   c:\windows\system32\ntfrs.exe Ignore
          LocalSystem         0
NT LM Security Support Provider         NtLmSsp
          Stopped   Manual    Share Process
          c:\windows\system32\lsass.exe Normal
          LocalSystem         0
Removable Storage   NtmsSvc   Stopped   Manual
          Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Plug and Play       PlugPlay  Running   Auto
          Share Process
          c:\windows\system32\services.exe
          Normal    LocalSystem         0
IPSEC Services      PolicyAgent         Running
          Auto      Share Process
          c:\windows\system32\lsass.exe Normal
          LocalSystem         0
Protected Storage   ProtectedStorage    Running
          Auto      Share Process
          c:\windows\system32\lsass.exe Normal
          LocalSystem         0
Remote Access Auto Connection Manager   RasAuto
          Stopped   Manual    Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Remote Access Connection Manager        RasMan
          Stopped   Manual    Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Remote Desktop Help Session Manager     RDSessMgr
          Stopped   Manual    Own Process
          c:\windows\system32\sessmgr.exe
          Normal    LocalSystem         0
Routing and Remote Access     RemoteAccess
          Stopped   Disabled  Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Remote Registry     RemoteRegistry      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     Running
          Auto      Share Process
          c:\windows\system32\lsass.exe Normal
          LocalSystem         0
Smart Card          SCardSvr  Stopped   Manual
          Share Process
          c:\windows\system32\scardsvr.exe
          Ignore    NT AUTHORITY\LocalService     0

Task Scheduler      Schedule  Stopped   Disabled
          Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Secondary Logon     seclogon  Stopped   Disabled
          Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Ignore    LocalSystem         0
System Event Notification     SENS      Running
          Auto      Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
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
          Running   Auto      Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Ignore    LocalSystem         0
Print Spooler       Spooler   Stopped   Disabled  Own
Process   c:\windows\system32\spoolsv.exe
          Normal    LocalSystem         0
SQLSERVERAGENT      SQLSERVERAGENT      Stopped
          Manual    Own Process
          c:\sqlser~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         Running
          Manual    Share Process
          c:\windows\system32\svchost.exe -k termsvcs
          Normal    LocalSystem         0
Themes    Themes    Stopped   Disabled  Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Telnet    TlntSvr   Stopped   Disabled  Own Process
          c:\windows\system32\tlntsvr.exe
          Normal    NT AUTHORITY\LocalService     0

Distributed Link Tracking Server        TrkSvr
          Stopped   Disabled  Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Distributed Link Tracking Client        TrkWks
          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   Running   Auto
          Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
WebClient WebClient Stopped   Disabled  Share Process
          c:\windows\system32\svchost.exe -k
localservice        Normal    NT
AUTHORITY\LocalService        0
WinHTTP Web Proxy Auto-Discovery Service
          WinHttpAutoProxySvc Stopped   Manual
          Share Process
          c:\windows\system32\svchost.exe -k
localservice        Normal    NT
AUTHORITY\LocalService        0
```

```
Windows Management Instrumentation      winmgmt
          Running   Auto      Share Process
          c:\windows\system32\svchost.exe -k netsvcs
          Ignore    LocalSystem         0
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
HP System Tools     All Users:HP System Tools     All
Users
HP System Tools\HP Array Configuration Utility    All
Users:HP System Tools\HP Array Configuration Utility
          All Users
Microsoft SQL Server          All Users:Microsoft SQL
Server    All Users
Startup   All Users:Startup   All Users
Accessories         NT AUTHORITY\SYSTEM:Accessories
          NT AUTHORITY\SYSTEM
Accessories\Accessibility     NT
AUTHORITY\SYSTEM:Accessories\Accessibility        NT
AUTHORITY\SYSTEM
```

```
Accessories\Entertainment     NT
AUTHORITY\SYSTEM:Accessories\Entertainment        NT
AUTHORITY\SYSTEM
Startup   NT AUTHORITY\SYSTEM:Startup   NT
AUTHORITY\SYSTEM
Accessories         DL385\Administrator:Accessories
          DL385\Administrator
Accessories\Accessibility
          DL385\Administrator:Accessories\Accessibili
ty        DL385\Administrator
Accessories\Entertainment
          DL385\Administrator:Accessories\Entertainme
nt        DL385\Administrator
Administrative Tools
          DL385\Administrator:Administrative Tools
          DL385\Administrator
Startup   DL385\Administrator:Startup
          DL385\Administrator

[Startup Programs]

Program   Command   User Name Location
desktop   desktop.ini         NT AUTHORITY\SYSTEM
          Startup
desktop   desktop.ini         DL385\Administrator
          Startup
desktop   desktop.ini         .DEFAULT  Startup
desktop   desktop.ini         All Users Common
Startup
Service Manager
          c:\progra~1\micros~1\80\tools\binn\sqlmangr
.exe  /n  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

[Internet Settings]



[Internet Explorer]

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

Item      Value
```

```
Version   6.0.3790.0
Build     63790
Application Path    C:\Program Files\Internet
Explorer
Language  English (United States)
Active Printer      Not Available

Cipher Strength     128-bit
Content Advisor     Disabled
IEAK Install        No

[File Versions]

File      Version   Size      Date      Path
          Company
actxprxy.dll        6.0.3790.0          95 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

advpack.dll         6.0.3790.0          94 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

asctrls.ocx         6.0.3790.0          90 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

browselc.dll        6.0.3790.0          62 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

browseui.dll        6.0.3790.0          1,033 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

cdfview.dll         6.0.3790.0          144 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

comctl32.dll        5.82.3790.0         561 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

dxtrans.dll         6.3.3790.0          198 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

dxtmsft.dll         6.3.3790.0          344 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

iecont.dll          <File Missing>      Not Available
          Not Available       Not Available       Not
Available
iecontlc.dll        <File Missing>      Not Available
          Not Available       Not Available       Not
Available
iedkcs32.dll        16.0.3790.0         300 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

iepeers.dll         6.0.3790.0          230 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

iesetup.dll         6.0.3790.0          59 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

ieuinit.inf         Not Available       20 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Not Available
iexplore.exe        6.0.3790.0          90 KB
          3/25/2003 6:00:00 AM          C:\Program
Files\Internet Explorer       Microsoft Corporation

imgutil.dll         5.2.3790.0          35 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

inetcpl.cpl         6.0.3790.0          303 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

inetcplc.dll        6.0.3790.0          109 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

inseng.dll          6.0.3790.0          72 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

mlang.dll 6.0.3790.0          570 KB    3/25/2003
6:00:00 AM          C:\WINDOWS\system32 Microsoft
Corporation
msencode.dll        2002.10.4.0         112 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Not Available
mshta.exe 6.0.3790.0          26 KB     3/25/2003
6:00:00 AM          C:\WINDOWS\system32 Microsoft
Corporation
mshtml.dll          6.0.3790.0          2,848 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

mshtml.tlb          6.0.3790.0          1,319 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

mshtmled.dll        6.0.3790.0          444 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

mshtmler.dll        6.0.3790.0          55 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

msident.dll         6.0.3790.0          47 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

msidntld.dll        6.0.3790.0          15 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation
```

```
msieftp.dll         6.0.3790.0          230 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

msrating.dll        6.0.3790.0          132 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

mstime.dll          6.0.3790.0          491 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

occache.dll         6.0.3790.0          89 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

proctexe.ocx        6.3.3790.0          78 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Intel Corporation
sendmail.dll        6.0.3790.0          52 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

shdoclc.dll         6.0.3790.0          589 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

shdocvw.dll         6.0.3790.0          1,361 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

shfolder.dll        6.0.3790.0          23 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

shlwapi.dll         6.0.3790.0          281 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

tdc.ocx   1.3.0.3130          58 KB     3/25/2003
6:00:00 AM          C:\WINDOWS\system32 Microsoft
Corporation
url.dll   6.0.3790.0          36 KB     3/25/2003
6:00:00 AM          C:\WINDOWS\system32 Microsoft
Corporation
urlmon.dll          6.0.3790.0          502 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

webcheck.dll        6.0.3790.0          262 KB
          3/25/2003 6:00:00 AM
          C:\WINDOWS\system32 Microsoft Corporation

wininet.dll         6.0.3790.0          609 KB
          3/25/2003 6:00:00 AM
          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\NetworkService\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 Summary

```
System Information report written at: 02/04/2005
01:01:18 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         CL1
System Manufacturer HP
System Model        ProLiant DL360 G3
System Type         X86-based PC
Processor x86 Family 15 Model 2 Stepping 7
GenuineIntel ~37426 Mhz
Processor x86 Family 15 Model 2 Stepping 7
GenuineIntel ~37426 Mhz
BIOS Version        07/04/03
Windows Directory   C:\WINNT
System Directory    C:\WINNT\System32
Boot Device         \Device\Harddisk0\Partition1
Locale    United States
User Name CL1\Administrator
Time Zone Central Standard Time
Total Physical Memory         1,048,084 KB
Available Physical Memory     856,160 KB
Total Virtual Memory          2,783,536 KB
Available Virtual Memory      2,493,280 KB
Page File Space     1,735,452 KB
Page File C:\pagefile.sys

[Hardware Resources]

[ Following are sub-categories of this main category
]

[Conflicts/Sharing]

Resource  Device
IRQ 7     Base System Device
IRQ 7     Standard OpenHCD USB Host Controller

[DMA]

Channel   Device    Status
7         Direct memory access controller         OK
2         Standard floppy disk controller         OK

[Forced Hardware]

Device    PNP Device ID
```

```
No Forced Hardware

[I/O]

Address Range       Device    Status
0x0000-0x0CFF       PCI bus   OK
0x0000-0x0CFF       PCI bus   OK
0x0000-0x0CFF       Direct memory access controller
          OK
0x03B0-0x03BB       PCI bus   OK
0x03B0-0x03BB       ATI Technologies Inc. RAGE XL PCI
          OK
0x03C0-0x03DF       PCI bus   OK
0x03C0-0x03DF       ATI Technologies Inc. RAGE XL PCI
          OK
0x2400-0x24FF       ATI Technologies Inc. RAGE XL PCI
          OK
0x2800-0x28FF       Compaq Smart Array 5i         OK
0x1800-0x18FF       Base System Device  OK
0x2C00-0x2CFF       Base System Device  OK
0x0A79-0x0A79       ISAPNP Read Data Port         OK
0x0279-0x0279       ISAPNP Read Data Port         OK
0x02F4-0x02F7       ISAPNP Read Data Port         OK
0x0F50-0x0F58       Motherboard resources         OK
0x0408-0x040F       Motherboard resources         OK
0x0092-0x0092       Motherboard resources         OK
0x0900-0x0903       Motherboard resources         OK
0x0910-0x0911       Motherboard resources         OK
0x0920-0x0923       Motherboard resources         OK
0x0930-0x0937       Motherboard resources         OK
0x0940-0x0947       Motherboard resources         OK
0x0950-0x0957       Motherboard resources         OK
0x0C06-0x0C08       Motherboard resources         OK
0x0C14-0x0C14       Motherboard resources         OK
0x0C49-0x0C4A       Motherboard resources         OK
0x0C50-0x0C52       Motherboard resources         OK
0x0C6C-0x0C6F       Motherboard resources         OK
0x0010-0x001F       Motherboard resources         OK
0x0230-0x0233       Motherboard resources         OK
0x0260-0x0267       Motherboard resources         OK
0x04D0-0x04D1       Motherboard resources         OK
0x0700-0x070F       Motherboard resources         OK
0x0800-0x081F       Motherboard resources         OK
0x0C80-0x0C83       Motherboard resources         OK
0x0CD4-0x0CD7       Motherboard resources         OK
0x0CF9-0x0CF9       Motherboard resources         OK
0x0020-0x0021       Programmable interrupt controller
          OK
0x00A0-0x00A1       Programmable interrupt controller
          OK
0x0C00-0x0C01       Programmable interrupt controller
          OK
0x0040-0x0043       System timer        OK
0x0080-0x008F       Direct memory access controller
          OK
0x00C0-0x00DF       Direct memory access controller
          OK
0x040B-0x040B       Direct memory access controller
          OK
0x04D6-0x04D6       Direct memory access controller
          OK
0x0061-0x0061       System speaker      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
0x002E-0x002F       Extended IO Bus     OK
0x0220-0x0223       Extended IO Bus     OK
0x0240-0x025F       Extended IO Bus     OK
0x0070-0x0073       Extended IO Bus     OK
0x03F8-0x03FF       Communications Port (COM1)    OK
0x03F2-0x03F5       Standard floppy disk controller
          OK
0x03F7-0x03F7       Standard floppy disk controller
          OK
0x2000-0x200F       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

[IRQs]

IRQ Number          Device
9         Microsoft ACPI-Compliant System
31        Compaq Smart Array 5i
5         Base System Device
7         Base System Device
7         Standard OpenHCD USB Host Controller
1         Standard 101/102-Key or Microsoft Natural
PS/2 Keyboard
12        PS/2 Compatible Mouse
4         Communications Port (COM1)
6         Standard floppy disk controller
14        Primary IDE Channel
30        Compaq NC7781 Gigabit Server Adapter #2
29        Compaq NC7781 Gigabit Server Adapter

[Memory]

Range     Device    Status
0xA0000-0xBFFFF     PCI bus   OK
0xA0000-0xBFFFF     ATI Technologies Inc. RAGE XL PCI
          OK
0xF5D00000-0xF6FFFFFF         PCI bus   OK
0xF6000000-0xF6FFFFFF         ATI Technologies Inc.
RAGE XL PCI         OK
0xF5FF0000-0xF5FF0FFF         ATI Technologies Inc.
RAGE XL PCI         OK
0xF5F80000-0xF5FBFFFF         Compaq Smart Array 5i
          OK
0xF5DF0000-0xF5DF3FFF         Compaq Smart Array 5i
          OK
0xF5F70000-0xF5F701FF         Base System Device  OK
0xF5F60000-0xF5F607FF         Base System Device  OK
0xF5F50000-0xF5F51FFF         Base System Device  OK
0xF5E80000-0xF5EFFFFF         Base System Device  OK
0xF5E70000-0xF5E70FFF         Standard OpenHCD USB
Host Controller     OK
0xF7E00000-0xF7EFFFFF         PCI bus   OK
0xF7EF0000-0xF7EFFFFF         Compaq NC7781 Gigabit
Server Adapter #2   OK
0xF7F00000-0xF7FFFFFF         PCI bus   OK
```

```
0xF7FF0000-0xF7FFFFFF         Compaq NC7781 Gigabit
Server Adapter      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\msgsm32.acm Microsoft Corporation
          OK
          C:\WINNT\System32\MSGSM32.ACM 5.00.2134.1
          22.27 KB (22,800 bytes)       12/7/1999
7:00:00 AM
c:\winnt\system32\msadp32.acm Microsoft Corporation
          OK
          C:\WINNT\System32\MSADP32.ACM 5.00.2134.1
          14.77 KB (15,120 bytes)       12/7/1999
7:00:00 AM
c:\winnt\system32\tssoft32.acm          DSP GROUP,
INC.                OK
          C:\WINNT\System32\TSSOFT32.ACM
          1.01      9.27 KB (9,488 bytes)
          12/7/1999 7:00:00 AM
c:\winnt\system32\msg711.acm  Microsoft Corporation
          OK
          C:\WINNT\System32\MSG711.ACM  5.00.2134.1
          10.27 KB (10,512 bytes)       12/7/1999
7:00:00 AM
c:\winnt\system32\msg723.acm  Microsoft Corporation
          OK
          C:\WINNT\System32\MSG723.ACM  4.4.3385
          106.77 KB (109,328 bytes)     9/13/2002
5:46:03 PM
c:\winnt\system32\iac25_32.ax Intel Corporation
          Indeo® audio software         OK
          C:\WINNT\System32\IAC25_32.AX 2.05.53
          195.00 KB (199,680 bytes)     12/7/1999
7:00:00 AM
c:\winnt\system32\imaadp32.acm          Microsoft
Corporation                   OK
          C:\WINNT\System32\IMAADP32.ACM
          5.00.2134.1         16.27 KB (16,656 bytes)
          12/7/1999 7:00:00 AM
c:\winnt\system32\lhacm.acm   Microsoft Corporation
          OK
          C:\WINNT\System32\LHACM.ACM   4.4.3385
          33.27 KB (34,064 bytes)       9/13/2002
5:46:04 PM

[Video Codecs]

Codec     Manufacturer        Description
          Status    File      Version   Size
          Creation Date
c:\winnt\system32\ir50_32.dll Intel Corporation
          Indeo® video 5.10   OK
          C:\WINNT\System32\IR50_32.DLL
          R.5.10.15.2.55      737.50 KB (755,200
bytes)    12/7/1999 7:00:00 AM
c:\winnt\system32\msh261.drv  Microsoft Corporation
                    OK
          C:\WINNT\System32\MSH261.DRV  4.4.3385
          163.77 KB (167,696 bytes)     9/13/2002
5:46:04 PM
c:\winnt\system32\msh263.drv  Microsoft Corporation
                    OK
          C:\WINNT\System32\MSH263.DRV  4.4.3385
          252.27 KB (258,320 bytes)     9/13/2002
5:45:39 PM
c:\winnt\system32\ir32_32.dll Intel(R) Corporation
                    OK
          C:\WINNT\System32\IR32_32.DLL Not Available
          194.50 KB (199,168 bytes)     12/7/1999
7:00:00 AM
c:\winnt\system32\iccvid.dll  Radius Inc.
          OK        C:\WINNT\System32\ICCVID.DLL
          1.10.0.6  108.00 KB (110,592 bytes)
          12/7/1999 7:00:00 AM
c:\winnt\system32\msrle32.dll Microsoft Corporation
                    OK
          C:\WINNT\System32\MSRLE32.DLL 5.00.2134.1
          10.77 KB (11,024 bytes)       12/7/1999
7:00:00 AM
c:\winnt\system32\msvidc32.dll          Microsoft
Corporation                   OK
          C:\WINNT\System32\MSVIDC32.DLL
          5.00.2134.1         27.27 KB (27,920 bytes)
          12/7/1999 7:00:00 AM

[CD-ROM]

Item      Value
Drive     D:
Description         CD-ROM Drive
Media Loaded        False
Media Type          CD-ROM
Name      COMPAQ CRN-8245B
Manufacturer        (Standard CD-ROM drives)
Status    OK
Transfer Rate       Not Available
SCSI Target ID      0
PNP Device ID       IDE\CDROMCOMPAQ_CRN-
8245B_________________________2.19____\5&FB0C83D&0&0.0
.0


[Sound Device]

Item      Value
No sound devices

[Display]

Item      Value
Name      ATI Technologies Inc. RAGE XL PCI
PNP Device ID
          PCI\VEN_1002&DEV_4752&SUBSYS_001E0E11&REV_2
7\3&267A616A&0&18
Adapter Type        ATI RAGE XL PCI, ATI Technologies
Inc. compatible
Adapter Description ATI Technologies Inc. RAGE XL PCI
Adapter RAM         8.00 MB (8,388,608 bytes)
Installed Drivers   atidrab.dll
Driver Version      5.00.2179.1
INF File  display.inf (atirage3 section)
Color Planes        1
Color Table Entries 65536
Resolution          640 x 480 x 60 hertz
Bits/Pixel          16


[Infrared]

Item      Value
No infrared devices

[Input]

[ Following are sub-categories of this main category
]

[Keyboard]

Item      Value
Description         Standard 101/102-Key or Microsoft
Natural PS/2 Keyboard
Name      Enhanced (101- or 102-key)
Layout    00000409
PNP Device ID       ACPI\PNP0303\4&35118DFF&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&35118DFF&0
Power Management Supported    False
Double Click Threshold        6
Handedness          Right Handed Operation


[Modem]

Item      Value
No modems

[Network]

[ Following are sub-categories of this main category
]

[Adapter]

Item      Value
```

```
Name      [00000000] RAS Async Adapter
Adapter Type        Not Available
Product Name        RAS Async Adapter
Installed True
PNP Device ID       Not Available
Last Reset          2/3/2005 2:54:24 PM
Index     0
Service Name        AsyncMac
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        False
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         Not Available
Service Name        Not Available

Name      [00000001] WAN Miniport (L2TP)
Adapter Type        Not Available
Product Name        WAN Miniport (L2TP)
Installed True
PNP Device ID       ROOT\MS_L2TPMINIPORT\0000
Last Reset          2/3/2005 2:54:24 PM
Index     1
Service Name        Rasl2tp
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        False
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         Not Available
Service Name        Rasl2tp
Driver    c:\winnt\system32\drivers\rasl2tp.sys
(50800, 5.00.2179.1)

Name      [00000002] WAN Miniport (PPTP)
Adapter Type        Wide Area Network (WAN)
Product Name        WAN Miniport (PPTP)
Installed True
PNP Device ID       ROOT\MS_PPTPMINIPORT\0000
Last Reset          2/3/2005 2:54:24 PM
Index     2
Service Name        PptpMiniport
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        False
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         50:50:54:50:30:30
Service Name        PptpMiniport
Driver    c:\winnt\system32\drivers\raspptp.sys
(47856, 5.00.2160.1)

Name      [00000003] Direct Parallel
Adapter Type        Not Available
Product Name        Direct Parallel
Installed True
PNP Device ID       ROOT\MS_PTIMINIPORT\0000
Last Reset          2/3/2005 2:54:24 PM
Index     3
Service Name        Raspti
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        False
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         Not Available
Service Name        Raspti
Driver    c:\winnt\system32\drivers\raspti.sys
(16880, 5.00.2146.1)

Name      [00000004] WAN Miniport (IP)
Adapter Type        Not Available
Product Name        WAN Miniport (IP)
Installed True
PNP Device ID       ROOT\MS_NDISWANIP\0000
Last Reset          2/3/2005 2:54:24 PM
Index     4
Service Name        NdisWan
IP Address          Not Available
IP Subnet Not Available
Default IP Gateway  Not Available
DHCP Enabled        False
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         Not Available
Service Name        NdisWan
Driver    c:\winnt\system32\drivers\ndiswan.sys
(90096, 5.00.2195.2779)

Name      [00000005] Compaq NC7780 Gigabit Server
Adapter
Adapter Type        Not Available
Product Name        Compaq NC7780 Gigabit Server
Adapter
Installed True
PNP Device ID       Not Available
Last Reset          2/3/2005 2:54:24 PM
Index     5
Service Name        q57w2k
IP Address          130.168.40.1
IP Subnet 255.255.0.0
Default IP Gateway  Not Available
DHCP Enabled        True
DHCP Server         130.168.253.2
DHCP Lease Expires  9/16/2002 7:03:07 PM
DHCP Lease Obtained 9/15/2002 7:03:07 PM
MAC Address         00:0B:CD:4F:5B:F7
Service Name        Not Available

Name      [00000006] Compaq NC7780 Gigabit Server
Adapter
Adapter Type        Not Available
Product Name        Compaq NC7780 Gigabit Server
Adapter
Installed True
PNP Device ID       Not Available
Last Reset          2/3/2005 2:54:24 PM
Index     6
Service Name        q57w2k
IP Address          130.172.11.1
IP Subnet 255.255.0.0
Default IP Gateway  Not Available
DHCP Enabled        False
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         00:0B:CD:4F:5C:7A
Service Name        Not Available

Name      [00000007] Compaq NC3123 Fast Ethernet NIC
Adapter Type        Not Available
Product Name        Compaq NC3123 Fast Ethernet NIC
Installed True
PNP Device ID       Not Available
Last Reset          2/3/2005 2:54:24 PM
Index     7
Service Name        N100
IP Address          130.172.11.1
IP Subnet 255.255.0.0
Default IP Gateway  Not Available
DHCP Enabled        True
DHCP Server         130.168.253.2
DHCP Lease Expires  9/16/2002 3:58:55 PM
DHCP Lease Obtained 9/15/2002 3:58:55 PM
MAC Address         00:0B:CD:4F:5C:7A
Service Name        Not Available

Name      [00000008] Compaq NC7781 Gigabit Server
Adapter
Adapter Type        Ethernet 802.3
Product Name        Compaq NC7781 Gigabit Server
Adapter
Installed True
PNP Device ID
          PCI\VEN_14E4&DEV_16A7&SUBSYS_00CB0E11&REV_0
2\3&1070020&0&10
Last Reset          2/3/2005 2:54:24 PM
Index     8
Service Name        q57w2k
IP Address          130.172.11.1
IP Subnet 255.255.0.0
Default IP Gateway  Not Available
DHCP Enabled        False
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         00:0B:CD:4F:5C:7A
Service Name        q57w2k
IRQ Number          29
Driver    c:\winnt\system32\drivers\q57w2k.sys
(77776, 2.75.0.0)

Name      [00000009] Compaq NC7781 Gigabit Server
Adapter
Adapter Type        Ethernet 802.3
Product Name        Compaq NC7781 Gigabit Server
Adapter
Installed True
```

```
PNP Device ID
          PCI\VEN_14E4&DEV_16A7&SUBSYS_00CB0E11&REV_0
2\3&13C0B0C5&0&10
Last Reset          2/3/2005 2:54:24 PM
Index     9
Service Name        q57w2k
IP Address          130.168.40.1
IP Subnet 255.255.0.0
Default IP Gateway  Not Available
DHCP Enabled        False
DHCP Server         Not Available
DHCP Lease Expires  Not Available
DHCP Lease Obtained Not Available
MAC Address         00:0B:CD:4F:5B:F7
Service Name        q57w2k
IRQ Number          30
Driver    c:\winnt\system32\drivers\q57w2k.sys
(77776, 2.75.0.0)


[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_{2D8AA674-9F13-43EE-9055-
F9ECADD87F7F}] SEQPACKET 6
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_{2D8AA674-9F13-43EE-9055-
F9ECADD87F7F}] DATAGRAM 6
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_{EFD5741D-3A14-456C-98EB-
17ABC580A075}] SEQPACKET 5
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_{EFD5741D-3A14-456C-98EB-
17ABC580A075}] DATAGRAM 5
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_{4249431A-469E-4735-A292-
01AA526741FC}] 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_{4249431A-469E-4735-A292-
01AA526741FC}] 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_{3B09DDB7-7EB8-4941-8121-
52DC6359F5A6}] 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_{3B09DDB7-7EB8-4941-8121-
52DC6359F5A6}] 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_{684FA660-D082-4A8C-AC8C-
C9D449B21686}] 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_{684FA660-D082-4A8C-AC8C-
C9D449B21686}] 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_{D90E04F2-3AD9-4F98-9464-
751E106D7E6A}] 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_{D90E04F2-3AD9-4F98-9464-
751E106D7E6A}] 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_{3F1BA297-E685-416B-82D7-
70E771CC8745}] 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_{3F1BA297-E685-416B-82D7-
70E771CC8745}] 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\0
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)
```

```

[Parallel]

Item      Value
No parallel port information

[Storage]

[ Following are sub-categories of this main category
]

[Drives]

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

Drive     C:
Description         Local Fixed Disk
Compressed          False
File System         NTFS
Size      16.95 GB (18,202,509,312 bytes)
Free Space          12.86 GB (13,806,264,320 bytes)
Volume Name
Volume Serial Number          C8B488FA
Partition Disk #0, Partition #0
Partition Size      16.95 GB (18,202,512,384 bytes)
Starting Offset     32256 bytes
Drive Description   Disk drive
Drive Manufacturer  (Standard disk drives)
Drive Model         COMPAQ LOGICAL VOLUME 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  4
Drive SectorsPerTrack         63
Drive Size          18202544640 bytes
Drive TotalCylinders          2213
Drive TotalSectors  35551845
Drive TotalTracks   564315
Drive TracksPerCylinder       255


[SCSI]

Item      Value
Name      Compaq Smart Array 5i
Caption   Compaq Smart Array 5i
Driver    cpqcissm
Status    OK
PNP Device ID
          PCI\VEN_0E11&DEV_B178&SUBSYS_40800E11&REV_0
1\3&267A616A&0&20
Device ID
          PCI\VEN_0E11&DEV_B178&SUBSYS_40800E11&REV_0
1\3&267A616A&0&20
Device Map          Not Available
Index     Not Available
```

```
Max Number Controlled         Not Available
IRQ Number          31
I/O Port  0x2800-0x28FF
Driver    c:\winnt\system32\drivers\cpqcissm.sys
(14992, 5.40.2.0)


[Printing]

Name      Port Name Server Name
No printing information

[Problem Devices]

Device    PNP Device ID       Error Code
Base System Device
          PCI\VEN_0E11&DEV_B203&SUBSYS_B2060E11&REV_0
1\3&267A616A&0&28   28
Base System Device
          PCI\VEN_0E11&DEV_B204&SUBSYS_B2060E11&REV_0
1\3&267A616A&0&2A   28

[USB]

Device    PNP Device ID
Standard OpenHCD USB Host Controller
          PCI\VEN_1166&DEV_0220&SUBSYS_02201166&REV_0
5\3&267A616A&0&7A
USB Root Hub        USB\ROOT_HUB\4&AF5358C&0

[Software Environment]

[ Following are sub-categories of this main category
]

[Drivers]

Name      Description         File      Type
          Started   Start Mode          State
          Status    Error Control       Accept Pause
          Accept Stop
abiosdsk  Abiosdsk  Not Available       Kernel Driver
          False     Disabled  Stopped   OK
          Ignore    False     False
abp480n5  abp480n5  Not Available       Kernel Driver
          False     Disabled  Stopped   OK
          Normal    False     False
acpi      Microsoft ACPI Driver
          c:\winnt\system32\drivers\acpi.sys
          Kernel Driver       True      Boot
          Running   OK        Normal    False
          True
acpiec    ACPIEC
          c:\winnt\system32\drivers\acpiec.sys
          Kernel Driver       False     Disabled
          Stopped   OK        Normal    False
          False
adpu160m  adpu160m  Not Available       Kernel Driver
          False     Disabled  Stopped   OK
          Normal    False     False
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
alkernel  Altiris Kernel Driver
          c:\winnt\system32\drivers\alkernel.sys
          Kernel Driver       True      Manual
          Running   OK        Normal    False
          True
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
cpqcissm  cpqcissm
          c:\winnt\system32\drivers\cpqcissm.sys
          Kernel Driver       True      Boot
          Running   OK        Normal    False
          True
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
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
n100      Compaq Ethernet or Fast Ethernet NIC NT
Driver    c:\winnt\system32\drivers\n100nt5.sys
          Kernel Driver       False     Manual
          Stopped   OK        Normal    False
          False
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
          c:\winnt\system32\drivers\parallel.sys
          Kernel Driver       False     Auto
          Stopped   OK        Ignore    False
          False
parport   Parport
          c:\winnt\system32\drivers\parport.sys
          Kernel Driver       False     Auto
          Stopped   OK        Ignore    False
          False
```

```
partmgr   PartMgr
          c:\winnt\system32\drivers\partmgr.sys
          Kernel Driver       True      Boot
          Running   OK        Normal    False
          True
parvdm    ParVdm
          c:\winnt\system32\drivers\parvdm.sys
          Kernel Driver       False     Auto
          Stopped   OK        Ignore    False
          False
pci       PCI Bus Driver
          c:\winnt\system32\drivers\pci.sys
          Kernel Driver       True      Boot
          Running   OK        Critical  False
          True
pcidump   PCIDump   Not Available       Kernel Driver
          False     System    Stopped   OK
          Ignore    False     False
pciide    PCIIde
          c:\winnt\system32\drivers\pciide.sys
          Kernel Driver       True      Boot
          Running   OK        Normal    False
          True
pcmcia    Pcmcia
          c:\winnt\system32\drivers\pcmcia.sys
          Kernel Driver       False     Disabled
          Stopped   OK        Normal    False
          False
pdcomp    PDCOMP    Not Available       Kernel Driver
          False     Manual    Stopped   OK
          Ignore    False     False
pdframe   PDFRAME   Not Available       Kernel Driver
          False     Manual    Stopped   OK
          Ignore    False     False
pdreli    PDRELI    Not Available       Kernel Driver
          False     Manual    Stopped   OK
          Ignore    False     False
pdrframe  PDRFRAME  Not Available       Kernel Driver
          False     Manual    Stopped   OK
          Ignore    False     False
pptpminiport        WAN Miniport (PPTP)
          c:\winnt\system32\drivers\raspptp.sys
          Kernel Driver       True      Manual
          Running   OK        Normal    False
          True
ptilink   Direct Parallel Link Driver
          c:\winnt\system32\drivers\ptilink.sys
          Kernel Driver       True      Manual
          Running   OK        Normal    False
          True
q57w2k    Compaq NC7781 Gigabit Server Adapter
          c:\winnt\system32\drivers\q57w2k.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
rdpdr     Terminal Server Device Redirector Driver
          c:\winnt\system32\drivers\rdpdr.sys
          Kernel Driver       True      Manual
          Running   OK        Normal    False
          True
rdpwd     RDPWD
          c:\winnt\system32\drivers\rdpwd.sys
          Kernel Driver       True      Manual
          Running   OK        Ignore    False
          True
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       True      Manual
          Running   OK        Ignore    False
          True
termdd    Terminal Device Driver
          c:\winnt\system32\drivers\termdd.sys
          Kernel Driver       True      Auto
          Running   OK        Normal    False
          True
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%;%SystemR
oot%\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 7, GenuineIntel      <SYSTEM>
PROCESSOR_REVISION  0207      <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
          CL1\Administrator
TMP       %USERPROFILE%\Local Settings\Temp
          CL1\Administrator

[Jobs]

[ Following are sub-categories of this main category
]

[Print]

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

[Network Connections]

Local Name          Remote Name         Type
          Status    User Name
No network connections information


[Running Tasks]

Name      Path      Process ID          Priority  Min
Working Set         Max Working Set     Start Time
          Version   Size      File Date
system idle process Not Available       0         0
          Not Available       Not Available       Not
Available Unknown   Unknown   Unknown
system    Not Available       8         8         0
          1413120   Not Available       Unknown
          Unknown   Unknown
smss.exe  c:\winnt\system32\smss.exe    184       11
          204800    1413120   2/3/2005 8:54:35 PM
          5.00.2195.2901      44.27 KB (45,328 bytes)
          12/7/1999 7:00:00 AM
csrss.exe Not Available       212       13        Not
Available Not Available       2/3/2005 8:54:36 PM
          Unknown   Unknown   Unknown
winlogon.exe        c:\winnt\system32\winlogon.exe
          208       13        204800    1413120
          2/3/2005 8:54:37 PM 5.00.2195.2953
          173.77 KB (177,936 bytes)     12/7/1999
7:00:00 AM
services.exe        c:\winnt\system32\services.exe
          260       9         204800    1413120
          2/3/2005 8:54:38 PM 5.00.2195.2780
```

```
          86.77 KB (88,848 bytes)       12/7/1999
7:00:00 AM
lsass.exe c:\winnt\system32\lsass.exe   272       9
          204800    1413120   2/3/2005 8:54:38 PM
          5.00.2195.2964      32.77 KB (33,552 bytes)
          12/7/1999 7:00:00 AM
termsrv.exe         c:\winnt\system32\termsrv.exe 372
          10        204800    1413120   2/3/2005
8:54:38 PM          5.00.2195.2342      137.27 KB
(140,560 bytes)     9/13/2002 6:09:44 PM
aclient.exe         c:\program
files\altiris\aclient\aclient.exe       472       8
          204800    1413120   2/3/2005 8:54:39 PM
          5.6.124   3.83 MB (4,018,252 bytes)
          6/5/2003 1:55:46 PM
regsvc.exe          c:\winnt\system32\regsvc.exe  504
          8         204800    1413120   2/3/2005
8:54:39 PM          5.00.2195.2104      65.27 KB
(66,832 bytes)      9/13/2002 6:09:39 PM
rsys.exe  c:\benchcraft\rsys.exe        532       8
          204800    1413120   2/3/2005 8:54:39 PM Not
Available 32.00 KB (32,768 bytes)       9/13/2002
6:30:57 PM
svchost.exe         c:\winnt\system32\svchost.exe 548
          8         204800    1413120   2/3/2005
8:54:40 PM          5.00.2134.1         7.77 KB
(7,952 bytes)       12/7/1999 7:00:00 AM
svchost.exe         c:\winnt\system32\svchost.exe 652
          8         204800    1413120   2/3/2005
8:54:46 PM          5.00.2134.1         7.77 KB
(7,952 bytes)       12/7/1999 7:00:00 AM
mstask.exe          c:\winnt\system32\mstask.exe  680
          8         204800    1413120   2/3/2005
8:54:46 PM          4.71.2195.1         115.27 KB
(118,032 bytes)     9/13/2002 6:09:32 PM
winmgmt.exe
          c:\winnt\system32\wbem\winmgmt.exe      708
          8         204800    1413120   2/3/2005
8:54:46 PM          1.50.1085.0029      192.08 KB
(196,685 bytes)     9/13/2002 6:09:52 PM
inetinfo.exe
          c:\winnt\system32\inetsrv\inetinfo.exe  736
          8         204800    1413120   2/3/2005
8:54:46 PM          5.00.0984 14.27 KB (14,608 bytes)
          9/13/2002 6:10:42 PM
dfssvc.exe          c:\winnt\system32\dfssvc.exe  828
          8         204800    1413120   2/3/2005
8:54:48 PM          5.00.2195.2841      88.27 KB
(90,384 bytes)      9/13/2002 6:09:18 PM
svchost.exe         c:\winnt\system32\svchost.exe
          1000      8         204800    1413120
          2/3/2005 8:55:03 PM 5.00.2134.1
          7.77 KB (7,952 bytes)         12/7/1999
7:00:00 AM
logon.scr c:\winnt\system32\logon.scr   672       4
          204800    1413120   2/3/2005 9:09:49 PM
          5.00.2195.2104      127.77 KB (130,832
bytes)    9/13/2002 6:09:26 PM
dllhost.exe         Not Available       724       8
          Not Available       Not Available
          2/4/2005 8:56:40 AM Unknown   Unknown
          Unknown
```

```
csrss.exe Not Available       4824      13        Not
Available Not Available       2/4/2005 12:55:04 PM
          Unknown   Unknown   Unknown
winlogon.exe        c:\winnt\system32\winlogon.exe
          5124      13        204800    1413120
          2/4/2005 12:55:04 PM
          5.00.2195.2953      173.77 KB (177,936
bytes)    12/7/1999 7:00:00 AM
rdpclip.exe         c:\winnt\system32\rdpclip.exe
          1988      8         204800    1413120
          2/4/2005 12:55:07 PM          5.00.2174.1
          39.77 KB (40,720 bytes)       9/13/2002
5:45:10 PM
explorer.exe        c:\winnt\explorer.exe
          3868      8         204800    1413120
          2/4/2005 12:55:07 PM
          5.00.3315.2846      237.27 KB (242,960
bytes)    9/13/2002 6:09:47 PM
aclntusr.exe        c:\program
files\altiris\aclient\aclntusr.exe      4204      8
          204800    1413120   2/4/2005 12:55:07 PM
          5, 6, 0, 50         176.00 KB (180,224
bytes)    6/5/2003 1:55:47 PM
tardis.exe          c:\program files\tardis 2000
v1.4\tardis.exe     3464      8         204800
          1413120   2/4/2005 12:55:08 PM          5,
0, 1, 4   308.00 KB (315,392 bytes)     9/13/2002
6:21:25 PM
mmc.exe   c:\winnt\system32\mmc.exe     2016      8
          204800    1413120   2/4/2005 1:00:24 PM
          5.00.2195.2301      589.27 KB (603,408
bytes)    9/13/2002 6:09:26 PM
rsvp.exe  c:\winnt\system32\rsvp.exe    3356      8
          204800    1413120   2/4/2005 1:01:06 PM
          5.00.2167.1         172.77 KB (176,912
bytes)    12/7/1999 7:00:00 AM

[Loaded Modules]

Name      Version   Size      File Date Manufacturer
          Path
traffic.dll         5.00.2139.1         30.77 KB
(31,504 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\traffic.dll
rsvp.exe  5.00.2167.1         172.77 KB (176,912
bytes)    12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\rsvp.exe
wbemprox.dll        1.50.1085.0045      40.08 KB
(41,040 bytes)      9/13/2002 6:09:52 PM
          Microsoft Corporation
          c:\winnt\system32\wbem\wbemprox.dll
mlang.dll 5.00.3103.1000      510.77 KB (523,024
bytes)    9/13/2002 6:09:26 PM          Microsoft
Corporation         c:\winnt\system32\mlang.dll
cabinet.dll         5.00.2147.1         54.77 KB
(56,080 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\cabinet.dll
msinfo32.dll        5.00.2177.1         312.27 KB
(319,760 bytes)     9/13/2002 5:46:00 PM
          Microsoft Corporation         c:\program
files\common files\microsoft
shared\msinfo\msinfo32.dll
mmcndmgr.dll        5.00.2178.1         815.27 KB
(834,832 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\mmcndmgr.dll
msvcp50.dll         5.00.7051 552.50 KB (565,760
bytes)    12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\msvcp50.dll
mmc.exe   5.00.2195.2301      589.27 KB (603,408
bytes)    9/13/2002 6:09:26 PM          Microsoft
Corporation         c:\winnt\system32\mmc.exe
rapilib.dll         5.00.2195.2717      24.77 KB
(25,360 bytes)      9/13/2002 6:09:39 PM
          Microsoft Corporation
          c:\winnt\system32\rapilib.dll
rsvpsp.dll          5.00.2195.2749      74.77 KB
(76,560 bytes)      9/13/2002 6:09:40 PM
          Microsoft Corporation
          c:\winnt\system32\rsvpsp.dll
tardis.exe          5, 0, 1, 4          308.00 KB
(315,392 bytes)     9/13/2002 6:21:25 PM
          H.C.Mingham-Smith Ltd.        c:\program
files\tardis 2000 v1.4\tardis.exe
aclntusr.exe        5, 6, 0, 50         176.00 KB
(180,224 bytes)     6/5/2003 1:55:47 PM
          c:\program
files\altiris\aclient\aclntusr.exe
shdoclc.dll         5.00.3315.2879      324.50 KB
(332,288 bytes)     9/13/2002 6:09:41 PM
          Microsoft Corporation
          c:\winnt\system32\shdoclc.dll
faxshell.dll        5.00.2134.1         8.27 KB
(8,464 bytes)       12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\faxshell.dll
msacm32.dll         5.00.2134.1         65.27 KB
(66,832 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\msacm32.dll
avifil32.dll        5.00.2134.1         76.27 KB
(78,096 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\avifil32.dll
msvfw32.dll         5.00.2134.1         113.77 KB
(116,496 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\msvfw32.dll
docprop2.dll        5.00.2178.1         297.77 KB
(304,912 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\docprop2.dll
linkinfo.dll        5.00.2134.1         15.77 KB
(16,144 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\linkinfo.dll
powrprof.dll        5.00.3103.1000      13.27 KB
(13,584 bytes)      9/13/2002 6:09:38 PM
          Microsoft Corporation
          c:\winnt\system32\powrprof.dll
batmeter.dll        5.00.3103.1000      20.27 KB
(20,752 bytes)      9/13/2002 6:09:14 PM
          Microsoft Corporation
          c:\winnt\system32\batmeter.dll
stobject.dll        5.00.2195.2780      79.27 KB
(81,168 bytes)      9/13/2002 6:09:43 PM
          Microsoft Corporation
          c:\winnt\system32\stobject.dll
msi.dll   1.11.2405.0         1.69 MB (1,767,184
bytes)    9/13/2002 6:09:29 PM          Microsoft
Corporation         c:\winnt\system32\msi.dll
webcheck.dll        5.00.3315.1000      251.77 KB
(257,808 bytes)     9/13/2002 6:09:45 PM
          Microsoft Corporation
          c:\winnt\system32\webcheck.dll
ntshrui.dll         5.00.2134.1         46.77 KB
(47,888 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\ntshrui.dll
mydocs.dll          5.00.2920.0000      55.77 KB
(57,104 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\mydocs.dll
browseui.dll        5.00.3315.2846      788.77 KB
(807,696 bytes)     9/13/2002 6:09:14 PM
          Microsoft Corporation
          c:\winnt\system32\browseui.dll
shdocvw.dll         5.00.3315.2879      1.05 MB
(1,104,144 bytes)   9/13/2002 6:09:42 PM
          Microsoft Corporation
          c:\winnt\system32\shdocvw.dll
explorer.exe        5.00.3315.2846      237.27 KB
(242,960 bytes)     9/13/2002 6:09:47 PM
          Microsoft Corporation
          c:\winnt\explorer.exe
rdpclip.exe         5.00.2174.1         39.77 KB
(40,720 bytes)      9/13/2002 5:45:10 PM
          Microsoft Corporation
          c:\winnt\system32\rdpclip.exe
cscui.dll 5.00.2195.2959      228.27 KB (233,744
bytes)    9/13/2002 6:09:17 PM          Microsoft
Corporation         c:\winnt\system32\cscui.dll
logon.scr 5.00.2195.2104      127.77 KB (130,832
bytes)    9/13/2002 6:09:26 PM          Microsoft
Corporation         c:\winnt\system32\logon.scr
tapisrv.dll         5.00.2195.2955      169.27 KB
(173,328 bytes)     9/13/2002 6:09:44 PM
          Microsoft Corporation
          c:\winnt\system32\tapisrv.dll
dfssvc.exe          5.00.2195.2841      88.27 KB
(90,384 bytes)      9/13/2002 6:09:18 PM
          Microsoft Corporation
          c:\winnt\system32\dfssvc.exe
dbnetlib.dll        2000.080.0194.00    84.06 KB
(86,082 bytes)      9/13/2002 6:19:43 PM
          Microsoft Corporation
          c:\winnt\system32\dbnetlib.dll
adsldp.dll          5.00.2195.2778      119.77 KB
(122,640 bytes)     9/13/2002 6:09:12 PM
          Microsoft Corporation
          c:\winnt\system32\adsldp.dll
tpcc_com_all.dll    1, 0, 0, 1          80.00 KB
(81,920 bytes)      9/13/2002 6:29:44 PM
          c:\inetpub\wwwroot\tpcc_c~2.dll
```

```
ntwdblib.dll        2000.080.0194.00    268.06 KB
(274,489 bytes)     9/13/2002 6:20:13 PM
          Microsoft Corporation
          c:\winnt\system32\ntwdblib.dll
tpcc_dblib.dll      Not Available       28.00 KB
(28,672 bytes)      9/13/2002 6:29:42 PM          Not
Available c:\inetpub\wwwroot\tpcc_dblib.dll
mfc42.dll 6.00.8665.0         972.05 KB (995,383
bytes)    12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\mfc42.dll
wam.dll   5.00.0984 70.77 KB (72,464 bytes)
          9/13/2002 6:10:44 PM          Microsoft
Corporation         c:\winnt\system32\inetsrv\wam.dll
odbcint.dll         3.520.6526.0        88.00 KB
(90,112 bytes)      9/13/2002 6:19:39 PM
          Microsoft Corporation
          c:\winnt\system32\odbcint.dll
odbc32.dll          3.520.6526.0        216.27 KB
(221,456 bytes)     9/13/2002 6:19:39 PM
          Microsoft Corporation
          c:\winnt\system32\odbc32.dll
mtxoci.dll          2000.2.3471.1       101.77 KB
(104,208 bytes)     9/13/2002 6:09:33 PM
          Microsoft Corporation
          c:\winnt\system32\mtxoci.dll
resutils.dll        5.00.2195.2787      39.77 KB
(40,720 bytes)      9/13/2002 6:09:40 PM
          Microsoft Corporation
          c:\winnt\system32\resutils.dll
clusapi.dll         5.00.2195.2104      54.27 KB
(55,568 bytes)      9/13/2002 6:09:16 PM
          Microsoft Corporation
          c:\winnt\system32\clusapi.dll
mtxclu.dll          2000.2.3471.1       51.27 KB
(52,496 bytes)      9/13/2002 6:09:33 PM
          Microsoft Corporation
          c:\winnt\system32\mtxclu.dll
msdtcprx.dll        2000.2.3471.1       665.77 KB
(681,744 bytes)     9/13/2002 6:09:27 PM
          Microsoft Corporation
          c:\winnt\system32\msdtcprx.dll
comsvcs.dll         2000.2.3471.1       1.35 MB
(1,417,488 bytes)   9/13/2002 6:09:17 PM
          Microsoft Corporation
          c:\winnt\system32\comsvcs.dll
iislog.dll          5.00.0984 75.27 KB (77,072 bytes)
          9/13/2002 6:10:42 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\iislog.dll
inetsloc.dll        5.00.0984 20.27 KB (20,752 bytes)
          9/13/2002 6:09:24 PM          Microsoft
Corporation         c:\winnt\system32\inetsloc.dll
isatq.dll 5.00.0984 60.27 KB (61,712 bytes)
          9/13/2002 6:10:43 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\isatq.dll
security.dll        5.00.2154.1         5.77 KB
(5,904 bytes)       12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\security.dll
svcext.dll          5.00.0984 39.77 KB (40,720 bytes)
          9/13/2002 6:10:44 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\svcext.dll
admexs.dll          5.00.0984 27.77 KB (28,432 bytes)
          9/13/2002 6:10:41 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\admexs.dll
wamreg.dll          5.00.0984 45.77 KB (46,864 bytes)
          9/13/2002 6:10:44 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\wamreg.dll
metadata.dll        5.00.0984 68.77 KB (70,416 bytes)
          9/13/2002 6:10:43 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\metadata.dll
iismap.dll          5.00.0984 55.77 KB (57,104 bytes)
          9/13/2002 6:09:23 PM          Microsoft
Corporation         c:\winnt\system32\iismap.dll
nsepm.dll 5.00.0984 43.27 KB (44,304 bytes)
          9/13/2002 6:10:43 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\nsepm.dll
admwprox.dll        5.00.0984 31.77 KB (32,528 bytes)
          9/13/2002 5:45:33 PM          Microsoft
Corporation         c:\winnt\system32\admwprox.dll
coadmin.dll         5.00.0984 39.27 KB (40,208 bytes)
          9/13/2002 6:10:41 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\coadmin.dll
iisadmin.dll        5.00.0984 15.27 KB (15,632 bytes)
          9/13/2002 6:10:42 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\iisadmin.dll
rpcref.dll          5.00.0984 4.27 KB (4,368 bytes)
          9/13/2002 6:10:43 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\rpcref.dll
iisrtl.dll          5.00.0984 119.77 KB (122,640
bytes)    9/13/2002 6:09:23 PM          Microsoft
Corporation         c:\winnt\system32\iisrtl.dll
inetinfo.exe        5.00.0984 14.27 KB (14,608 bytes)
          9/13/2002 6:10:42 PM          Microsoft
Corporation
          c:\winnt\system32\inetsrv\inetinfo.exe
netui1.dll          5.00.2134.1         210.27 KB
(215,312 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\netui1.dll
netui0.dll          5.00.2134.1         70.27 KB
(71,952 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\netui0.dll
ntlanman.dll        5.00.2157.1         35.27 KB
(36,112 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\ntlanman.dll
wshnetbs.dll        5.00.2134.1         7.77 KB
(7,952 bytes)       12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\wshnetbs.dll
perfos.dll          5.00.2155.1         21.27 KB
(21,776 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\perfos.dll
provthrd.dll        1.50.1085.0000      68.07 KB
(69,708 bytes)      9/13/2002 5:45:53 PM
          Microsoft Corporation
          c:\winnt\system32\wbem\provthrd.dll
ntevt.dll 1.50.1085.0000      192.06 KB (196,669
bytes)    12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\wbem\ntevt.dll
framedyn.dll        1.50.1085.0000      164.05 KB
(167,992 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\wbem\framedyn.dll
cimwin32.dll        1.50.1085.0038      1.02 MB
(1,073,232 bytes)   9/13/2002 6:09:50 PM
          Microsoft Corporation
          c:\winnt\system32\wbem\cimwin32.dll
wbemsvc.dll         1.50.1085.0007      40.07 KB
(41,036 bytes)      9/13/2002 6:09:52 PM
          Microsoft Corporation
          c:\winnt\system32\wbem\wbemsvc.dll
wbemess.dll         1.50.1085.0039      364.07 KB
(372,804 bytes)     9/13/2002 6:09:52 PM
          Microsoft Corporation
          c:\winnt\system32\wbem\wbemess.dll
fastprox.dll        1.50.1085.0037      144.08 KB
(147,536 bytes)     9/13/2002 6:09:51 PM
          Microsoft Corporation
          c:\winnt\system32\wbem\fastprox.dll
wbemcore.dll        1.50.1085.0036      628.07 KB
(643,140 bytes)     9/13/2002 6:09:52 PM
          Microsoft Corporation
          c:\winnt\system32\wbem\wbemcore.dll
wbemcomn.dll        1.50.1085.0021      692.07 KB
(708,675 bytes)     9/13/2002 6:09:51 PM
          Microsoft Corporation
          c:\winnt\system32\wbem\wbemcomn.dll
winmgmt.exe         1.50.1085.0029      192.08 KB
(196,685 bytes)     9/13/2002 6:09:52 PM
          Microsoft Corporation
          c:\winnt\system32\wbem\winmgmt.exe
msidle.dll          5.00.2920.0000      6.27 KB
(6,416 bytes)       12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\msidle.dll
mstask.exe          4.71.2195.1         115.27 KB
(118,032 bytes)     9/13/2002 6:09:32 PM
          Microsoft Corporation
          c:\winnt\system32\mstask.exe
wmi.dll   5.00.2191.1         6.27 KB (6,416 bytes)
          12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\wmi.dll
netshell.dll        5.00.2195.2779      457.27 KB
(468,240 bytes)     9/13/2002 6:09:34 PM
          Microsoft Corporation
          c:\winnt\system32\netshell.dll
netman.dll          5.00.2195.2779      89.27 KB
(91,408 bytes)      9/13/2002 6:09:34 PM
          Microsoft Corporation
          c:\winnt\system32\netman.dll
ntmsdba.dll         5.00.2195.2779      167.27 KB
(171,280 bytes)     9/13/2002 6:09:35 PM
          Microsoft Corporation
          c:\winnt\system32\ntmsdba.dll
```

```
rasdlg.dll          5.00.2195.2671      514.27 KB
(526,608 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\rasdlg.dll
netcfgx.dll         5.00.2195.2228      534.77 KB
(547,600 bytes)     9/13/2002 6:09:34 PM
          Microsoft Corporation
          c:\winnt\system32\netcfgx.dll
rasmans.dll         5.00.2195.2728      147.27 KB
(150,800 bytes)     9/13/2002 6:09:39 PM
          Microsoft Corporation
          c:\winnt\system32\rasmans.dll
sens.dll  5.00.2163.1          36.77 KB (37,648 bytes)
          12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\sens.dll
ntmssvc.dll         5.00.2195.2779      391.27 KB
(400,656 bytes)     9/13/2002 6:09:35 PM
          Microsoft Corporation
          c:\winnt\system32\ntmssvc.dll
txfaux.dll          2000.2.3471.1       374.27 KB
(383,248 bytes)     9/13/2002 6:09:44 PM
          Microsoft Corporation
          c:\winnt\system32\txfaux.dll
es.dll    2000.2.3471.1       222.27 KB (227,600
bytes)    9/13/2002 6:09:21 PM          Microsoft
Corporation         c:\winnt\system32\es.dll
rpcss.dll 5.00.2195.2815      231.27 KB (236,816
bytes)    9/13/2002 6:09:40 PM          Microsoft
Corporation         c:\winnt\system32\rpcss.dll
svchost.exe         5.00.2134.1         7.77 KB
(7,952 bytes)       12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\svchost.exe
rsys.exe  Not Available       32.00 KB (32,768 bytes)
          9/13/2002 6:30:57 PM          Not Available
          c:\benchcraft\rsys.exe
regsvc.exe          5.00.2195.2104      65.27 KB
(66,832 bytes)      9/13/2002 6:09:39 PM
          Microsoft Corporation
          c:\winnt\system32\regsvc.exe
ntmarta.dll         5.00.2195.2862      98.77 KB
(101,136 bytes)     9/13/2002 6:09:35 PM
          Microsoft Corporation
          c:\winnt\system32\ntmarta.dll
psapi.dll 5.00.2134.1         28.27 KB (28,944 bytes)
          12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\psapi.dll
riched20.dll        5.30.23.1205        421.27 KB
(431,376 bytes)     9/13/2002 6:09:40 PM
          Microsoft Corporation
          c:\winnt\system32\riched20.dll
riched32.dll        5.00.2134.1         3.77 KB
(3,856 bytes)       12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\riched32.dll
comdlg32.dll        5.00.3103.1000      236.77 KB
(242,448 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\comdlg32.dll
aclient.exe         5.6.124   3.83 MB (4,018,252
bytes)    6/5/2003 1:55:46 PM Altiris, Inc.
          c:\program
files\altiris\aclient\aclient.exe
```

```
rdpwsx.dll          5.00.2180.1         94.40 KB
(96,664 bytes)      9/13/2002 5:45:10 PM
          Microsoft Corporation
          c:\winnt\system32\rdpwsx.dll
mstlsapi.dll        5.00.2181.1         24.77 KB
(25,360 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\mstlsapi.dll
icaapi.dll          5.00.2134.1         118.77 KB
(121,616 bytes)     9/13/2002 5:45:09 PM
          Microsoft Corporation
          c:\winnt\system32\icaapi.dll
regapi.dll          5.00.2155.1         35.27 KB
(36,112 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\regapi.dll
termsrv.exe         5.00.2195.2342      137.27 KB
(140,560 bytes)     9/13/2002 6:09:44 PM
          Microsoft Corporation
          c:\winnt\system32\termsrv.exe
iissuba.dll         5.00.0984 9.77 KB (10,000 bytes)
          12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\iissuba.dll
dssenh.dll          5.00.2195.2228      142.77 KB
(146,192 bytes)     9/13/2002 6:10:37 PM
          Microsoft Corporation
          c:\winnt\system32\dssenh.dll
oakley.dll          5.00.2195.2785      378.77 KB
(387,856 bytes)     9/13/2002 6:09:36 PM
          Microsoft Corporation
          c:\winnt\system32\oakley.dll
mfc42u.dll          6.00.8665.0         972.05 KB
(995,384 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\mfc42u.dll
polagent.dll        5.00.2183.1         108.27 KB
(110,864 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\polagent.dll
scecli.dll          5.00.2195.2780      105.27 KB
(107,792 bytes)     9/13/2002 6:09:41 PM
          Microsoft Corporation
          c:\winnt\system32\scecli.dll
atl.dll   3.00.8449 57.56 KB (58,938 bytes)
          12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\atl.dll
certcli.dll         5.00.2195.2778      130.77 KB
(133,904 bytes)     9/13/2002 6:09:16 PM
          Microsoft Corporation
          c:\winnt\system32\certcli.dll
mswsock.dll         5.00.2195.2871      62.77 KB
(64,272 bytes)      9/13/2002 6:09:33 PM
          Microsoft Corporation
          c:\winnt\system32\mswsock.dll
ntdsatq.dll         5.00.2195.2878      31.27 KB
(32,016 bytes)      9/13/2002 6:09:35 PM
          Microsoft Corporation
          c:\winnt\system32\ntdsatq.dll
ntdsa.dll 5.00.2195.2899      990.77 KB (1,014,544
bytes)    9/13/2002 6:09:34 PM          Microsoft
Corporation         c:\winnt\system32\ntdsa.dll
kdcsvc.dll          5.00.2195.2878      137.77 KB
(141,072 bytes)     9/13/2002 6:09:26 PM
```

```
          Microsoft Corporation
          c:\winnt\system32\kdcsvc.dll
sfmapi.dll          5.00.2134.1         38.77 KB
(39,696 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\sfmapi.dll
rassfm.dll          5.00.2195.2671      21.27 KB
(21,776 bytes)      9/13/2002 6:09:39 PM
          Microsoft Corporation
          c:\winnt\system32\rassfm.dll
mpr.dll   5.00.2195.2779      53.27 KB (54,544 bytes)
          9/13/2002 6:09:27 PM          Microsoft
Corporation         c:\winnt\system32\mpr.dll
rsabase.dll         5.00.2195.2228      128.27 KB
(131,344 bytes)     5/4/2001 12:05:02 PM
          Microsoft Corporation
          c:\winnt\system32\rsabase.dll
schannel.dll        5.00.2195.2922      138.27 KB
(141,584 bytes)     5/4/2001 12:05:02 PM
          Microsoft Corporation
          c:\winnt\system32\schannel.dll
netlogon.dll        5.00.2195.2865      357.77 KB
(366,352 bytes)     9/13/2002 6:09:34 PM
          Microsoft Corporation
          c:\winnt\system32\netlogon.dll
kerberos.dll        5.00.2195.2913      198.77 KB
(203,536 bytes)     9/13/2002 6:09:26 PM
          Microsoft Corporation
          c:\winnt\system32\kerberos.dll
msprivs.dll         5.00.2154.1         41.50 KB
(42,496 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\msprivs.dll
samsrv.dll          5.00.2195.2918      369.77 KB
(378,640 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\samsrv.dll
lsasrv.dll          5.00.2195.2964      492.77 KB
(504,592 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\lsasrv.dll
lsass.exe 5.00.2195.2964      32.77 KB (33,552 bytes)
          12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\lsass.exe
esent.dll 6.0.3940.13         1.08 MB (1,135,376
bytes)    9/13/2002 6:09:21 PM          Microsoft
Corporation         c:\winnt\system32\esent.dll
ntlsapi.dll         5.00.2134.1         6.77 KB
(6,928 bytes)       12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\ntlsapi.dll
wmicore.dll         5.00.2195.2842      72.27 KB
(74,000 bytes)      9/13/2002 6:09:46 PM
          Microsoft Corporation
          c:\winnt\system32\wmicore.dll
browser.dll         5.00.2195.2778      48.27 KB
(49,424 bytes)      9/13/2002 6:09:14 PM
          Microsoft Corporation
          c:\winnt\system32\browser.dll
trkwks.dll          5.00.2166.1         88.77 KB
(90,896 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\trkwks.dll
```

```
psbase.dll          5.00.2195.2779      111.77 KB
(114,448 bytes)     9/13/2002 6:09:39 PM
          Microsoft Corporation
          c:\winnt\system32\psbase.dll
cryptsvc.dll        5.00.2181.1         61.77 KB
(63,248 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\cryptsvc.dll
seclogon.dll        5.00.2135.1         15.77 KB
(16,144 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\seclogon.dll
cryptdll.dll        5.00.2135.1         41.27 KB
(42,256 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\cryptdll.dll
wkssvc.dll          5.00.2195.2780      95.27 KB
(97,552 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\wkssvc.dll
srvsvc.dll          5.00.2195.2904      79.27 KB
(81,168 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\srvsvc.dll
cfgmgr32.dll        5.00.2134.1         16.77 KB
(17,168 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\cfgmgr32.dll
dmserver.dll        2195.2778.297.3     11.77 KB
(12,048 bytes)      9/13/2002 6:09:19 PM
          VERITAS Software Corp.
          c:\winnt\system32\dmserver.dll
lmhsvc.dll          5.00.2195.2778      9.77 KB
(10,000 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\lmhsvc.dll
eventlog.dll        5.00.2178.1         43.77 KB
(44,816 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\eventlog.dll
scesrv.dll          5.00.2195.2780      226.27 KB
(231,696 bytes)     9/13/2002 6:09:41 PM
          Microsoft Corporation
          c:\winnt\system32\scesrv.dll
umpnpmgr.dll        5.00.2182.1         86.27 KB
(88,336 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\umpnpmgr.dll
services.exe        5.00.2195.2780      86.77 KB
(88,848 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\services.exe
wininet.dll         5.00.3315.1000      456.77 KB
(467,728 bytes)     9/13/2002 6:09:46 PM
          Microsoft Corporation
          c:\winnt\system32\wininet.dll
cryptnet.dll        5.131.2157.1        41.77 KB
(42,768 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\cryptnet.dll
msv1_0.dll          5.00.2195.2900      111.77 KB
(114,448 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\msv1_0.dll
ntdsapi.dll         5.00.2195.2661      55.77 KB
(57,104 bytes)      9/13/2002 6:09:35 PM
          Microsoft Corporation
          c:\winnt\system32\ntdsapi.dll
rasadhlp.dll        5.00.2168.1         7.27 KB
(7,440 bytes)       12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\rasadhlp.dll
winrnr.dll          5.00.2160.1         18.77 KB
(19,216 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\winrnr.dll
rnr20.dll 5.00.2195.2871      35.77 KB (36,624 bytes)
          9/13/2002 6:09:40 PM          Microsoft
Corporation         c:\winnt\system32\rnr20.dll
clbcatq.dll         2000.2.3471.1       496.77 KB
(508,688 bytes)     9/13/2002 6:09:16 PM
          Microsoft Corporation
          c:\winnt\system32\clbcatq.dll
dhcpcsvc.dll        5.00.2195.2778      88.77 KB
(90,896 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\dhcpcsvc.dll
tapi32.dll          5.00.2182.1         123.27 KB
(126,224 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\tapi32.dll
rasman.dll          5.00.2195.2780      54.77 KB
(56,080 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\rasman.dll
rasapi32.dll        5.00.2195.2671      189.77 KB
(194,320 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\rasapi32.dll
rtutils.dll         5.00.2168.1         43.77 KB
(44,816 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\rtutils.dll
adsldpc.dll         5.00.2195.2842      127.27 KB
(130,320 bytes)     9/13/2002 6:09:12 PM
          Microsoft Corporation
          c:\winnt\system32\adsldpc.dll
activeds.dll        5.00.2195.2778      174.77 KB
(178,960 bytes)     9/13/2002 6:09:09 PM
          Microsoft Corporation
          c:\winnt\system32\activeds.dll
oleaut32.dll        2.40.4517 612.27 KB (626,960
bytes)    12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\oleaut32.dll
mprapi.dll          5.00.2181.1         79.27 KB
(81,168 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\mprapi.dll
icmp.dll  5.00.2134.1         7.27 KB (7,440 bytes)
          12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\icmp.dll
iphlpapi.dll        5.00.2173.2         67.77 KB
(69,392 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\iphlpapi.dll
wshtcpip.dll        5.00.2195.2104      17.27 KB
(17,680 bytes)      9/13/2002 6:09:46 PM
          Microsoft Corporation
          c:\winnt\system32\wshtcpip.dll
msafd.dll 5.00.2195.2779      106.77 KB (109,328
bytes)    9/13/2002 6:09:27 PM          Microsoft
Corporation         c:\winnt\system32\msafd.dll
winspool.drv        5.00.2195.2780      109.77 KB
(112,400 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\winspool.drv
winscard.dll        5.00.2134.1         77.27 KB
(79,120 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\winscard.dll
wlnotify.dll        5.00.2195.2780      53.77 KB
(55,056 bytes)      9/13/2002 6:09:46 PM
          Microsoft Corporation
          c:\winnt\system32\wlnotify.dll
cscdll.dll          5.00.2195.2401      98.27 KB
(100,624 bytes)     9/13/2002 6:09:17 PM
          Microsoft Corporation
          c:\winnt\system32\cscdll.dll
lz32.dll  5.00.2134.1         9.77 KB (10,000 bytes)
          12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\lz32.dll
version.dll         5.00.2134.1         15.77 KB
(16,144 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\version.dll
rsaenh.dll          5.00.2195.2228      130.77 KB
(133,904 bytes)     9/13/2002 6:10:37 PM
          Microsoft Corporation
          c:\winnt\system32\rsaenh.dll
mscat32.dll         5.131.2134.1        7.77 KB
(7,952 bytes)       12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\mscat32.dll
ole32.dll 5.00.2195.2887      969.77 KB (993,040
bytes)    9/13/2002 6:09:38 PM          Microsoft
Corporation         c:\winnt\system32\ole32.dll
imagehlp.dll        5.00.2195.2778      125.77 KB
(128,784 bytes)     5/4/2001 12:05:02 PM
          Microsoft Corporation
          c:\winnt\system32\imagehlp.dll
msasn1.dll          5.00.2134.1         51.27 KB
(52,496 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\msasn1.dll
crypt32.dll         5.131.2195.2833     451.27 KB
(462,096 bytes)     9/13/2002 6:09:17 PM
          Microsoft Corporation
          c:\winnt\system32\crypt32.dll
wintrust.dll        5.131.2195.2779     162.27 KB
(166,160 bytes)     9/13/2002 6:09:46 PM
          Microsoft Corporation
          c:\winnt\system32\wintrust.dll
shlwapi.dll         5.00.3315.1000      282.77 KB
(289,552 bytes)     9/13/2002 6:09:42 PM
          Microsoft Corporation
          c:\winnt\system32\shlwapi.dll
shell32.dll         5.00.3315.2902      2.25 MB
(2,359,056 bytes)   9/13/2002 6:09:42 PM
```

```
          Microsoft Corporation
          c:\winnt\system32\shell32.dll
msgina.dll          5.00.2195.2779      324.27 KB
(332,048 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\msgina.dll
comctl32.dll        5.81      537.77 KB (550,672
bytes)    12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\comctl32.dll
setupapi.dll        5.00.2195.2663      555.77 KB
(569,104 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\setupapi.dll
winmm.dll 5.00.2161.1         184.77 KB (189,200
bytes)    12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\winmm.dll
winsta.dll          5.00.2195.2386      36.77 KB
(37,648 bytes)      9/13/2002 6:09:46 PM
          Microsoft Corporation
          c:\winnt\system32\winsta.dll
wsock32.dll         5.00.2195.2871      21.27 KB
(21,776 bytes)      9/13/2002 6:09:46 PM
          Microsoft Corporation
          c:\winnt\system32\wsock32.dll
dnsapi.dll          5.00.2195.2785      130.77 KB
(133,904 bytes)     9/13/2002 6:09:19 PM
          Microsoft Corporation
          c:\winnt\system32\dnsapi.dll
wldap32.dll         5.00.2195.2797      125.27 KB
(128,272 bytes)     9/13/2002 6:09:46 PM
          Microsoft Corporation
          c:\winnt\system32\wldap32.dll
ws2help.dll         5.00.2134.1         17.77 KB
(18,192 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\ws2help.dll
ws2_32.dll          5.00.2195.2780      67.77 KB
(69,392 bytes)      9/13/2002 6:09:46 PM
          Microsoft Corporation
          c:\winnt\system32\ws2_32.dll
samlib.dll          5.00.2195.2780      49.77 KB
(50,960 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\samlib.dll
netrap.dll          5.00.2134.1         11.27 KB
(11,536 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\netrap.dll
netapi32.dll        5.00.2195.2808      303.77 KB
(311,056 bytes)     9/13/2002 6:09:34 PM
          Microsoft Corporation
          c:\winnt\system32\netapi32.dll
profmap.dll         5.00.2181.1         29.27 KB
(29,968 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\profmap.dll
secur32.dll         5.00.2195.2862      46.77 KB
(47,888 bytes)      9/13/2002 6:09:41 PM
          Microsoft Corporation
          c:\winnt\system32\secur32.dll
sfc.dll   5.00.2195.2896      92.11 KB (94,320 bytes)
          9/13/2002 6:09:41 PM          Microsoft
Corporation         c:\winnt\system32\sfc.dll
```

```
nddeapi.dll         5.00.2137.1         15.27 KB
(15,632 bytes)      12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\nddeapi.dll
userenv.dll         5.00.2195.2780      361.77 KB
(370,448 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\userenv.dll
user32.dll          5.00.2195.2821      392.77 KB
(402,192 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\user32.dll
gdi32.dll 5.00.2195.2778      228.77 KB (234,256
bytes)    12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\gdi32.dll
rpcrt4.dll          5.00.2195.2832      437.27 KB
(447,760 bytes)     9/13/2002 6:09:40 PM
          Microsoft Corporation
          c:\winnt\system32\rpcrt4.dll
advapi32.dll        5.00.2195.2867      351.77 KB
(360,208 bytes)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\advapi32.dll
kernel32.dll        5.00.2195.2778      714.77 KB
(731,920 bytes)     12/7/1999 7:00:00 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)     12/7/1999 7:00:00 AM
          Microsoft Corporation
          c:\winnt\system32\winlogon.exe
sfcfiles.dll        5.00.2195.2967      948.27 KB
(971,024 bytes)     9/13/2002 6:09:41 PM
          Microsoft Corporation
          c:\winnt\system32\sfcfiles.dll
ntdll.dll 5.00.2195.2779      478.77 KB (490,256
bytes)    5/4/2001 12:05:02 PM          Microsoft
Corporation         c:\winnt\system32\ntdll.dll
smss.exe  5.00.2195.2901      44.27 KB (45,328 bytes)
          12/7/1999 7:00:00 AM          Microsoft
Corporation         c:\winnt\system32\smss.exe

[Services]

Display Name        Name      State     Start Mode
          Service Type        Path      Error Control
          Start Name          Tag ID
Altiris Client Service        AClient   Running
          Auto      Own Process         c:\program
files\altiris\aclient\aclient.exe -service
          Normal    LocalSystem         0
Alerter   Alerter   Stopped   Manual    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  Stopped   Manual
          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
          Stopped   Manual    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 Stopped   Manual    Share Process
          c:\winnt\system32\services.exe
          Normal    LocalSystem         0
NetMeeting Remote Desktop Sharing       mnmsrvc
          Stopped   Manual    Own Process
          c:\winnt\system32\mnmsrvc.exe Normal
          LocalSystem         0
Distributed Transaction Coordinator     MSDTC
          Stopped   Manual    Own Process
          c:\winnt\system32\msdtc.exe   Normal
          LocalSystem         0
Windows Installer   MSIServer Stopped   Manual
          Share Process
          c:\winnt\system32\msiexec.exe /v
          Normal    LocalSystem         0
Network DDE         NetDDE    Stopped   Manual
          Share Process
          c:\winnt\system32\netdde.exe  Normal
          LocalSystem         0
Network DDE DSDM    NetDDEdsdm          Stopped
          Manual    Share Process
          c:\winnt\system32\netdde.exe  Normal
          LocalSystem         0
Net Logon Netlogon  Stopped   Manual    Share Process
          c:\winnt\system32\lsass.exe   Normal
          LocalSystem         0
Network Connections Netman    Running   Manual
          Share Process
          c:\winnt\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
File Replication    NtFrs     Stopped   Manual    Own
Process   c:\winnt\system32\ntfrs.exe   Ignore
          LocalSystem         0
NT LM Security Support Provider         NtLmSsp
          Stopped   Manual    Share Process
          c:\winnt\system32\lsass.exe   Normal
          LocalSystem         0
Removable Storage   NtmsSvc   Running   Auto
          Share Process
          c:\winnt\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Plug and Play       PlugPlay  Running   Auto
          Share Process
          c:\winnt\system32\services.exe
          Normal    LocalSystem         0
IPSEC Policy Agent  PolicyAgent         Running
          Auto      Share Process
          c:\winnt\system32\lsass.exe   Normal
          LocalSystem         0
Protected Storage   ProtectedStorage    Running
          Auto      Share Process
          c:\winnt\system32\services.exe
          Normal    LocalSystem         0
Remote Access Auto Connection Manager   RasAuto
          Stopped   Manual    Share Process
          c:\winnt\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
```

```
Remote Access Connection Manager        RasMan
          Stopped   Manual    Share Process
          c:\winnt\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Routing and Remote Access     RemoteAccess
          Stopped   Disabled  Share Process
          c:\winnt\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Remote Registry Service       RemoteRegistry
          Running   Auto      Own Process
          c:\winnt\system32\regsvc.exe  Normal
          LocalSystem         0
Remote Command Service        RMSYS     Running
          Auto      Own Process
          c:\benchcraft\rsys.exe        Normal
          LocalSystem         0
Remote Procedure Call (RPC) Locator     RpcLocator
          Stopped   Manual    Own Process
          c:\winnt\system32\locator.exe Normal
          LocalSystem         0
Remote Procedure Call (RPC)   RpcSs     Running
          Auto      Share Process
          c:\winnt\system32\svchost -k rpcss
          Normal    LocalSystem         0
QoS RSVP  RSVP      Running   Manual    Own Process
          c:\winnt\system32\rsvp.exe -s Normal
          LocalSystem         0
Security Accounts Manager     SamSs     Running
          Auto      Share Process
          c:\winnt\system32\lsass.exe   Normal
          LocalSystem         0
Smart Card Helper   SCardDrv  Stopped   Manual
          Share Process
          c:\winnt\system32\scardsvr.exe
          Ignore    LocalSystem         0
Smart Card          SCardSvr  Stopped   Manual
          Share Process
          c:\winnt\system32\scardsvr.exe
          Ignore    LocalSystem         0
Task Scheduler      Schedule  Running   Auto
          Share Process
          c:\winnt\system32\mstask.exe  Normal
          LocalSystem         0
RunAs Service       seclogon  Running   Auto
          Share Process
          c:\winnt\system32\services.exe
          Ignore    LocalSystem         0
System Event Notification     SENS      Running
          Auto      Share Process
          c:\winnt\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Internet Connection Sharing   SharedAccess
          Stopped   Manual    Share Process
          c:\winnt\system32\svchost.exe -k netsvcs
          Normal    LocalSystem         0
Print Spooler       Spooler   Stopped   Manual    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         Running
          Auto      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
          Stopped   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\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
Tardis    All Users:Tardis    All Users
Accessories         CL1\Administrator:Accessories
          CL1\Administrator
Accessories\Accessibility
          CL1\Administrator:Accessories\Accessibility
          CL1\Administrator
Accessories\Entertainment
          CL1\Administrator:Accessories\Entertainment
          CL1\Administrator
Accessories\System Tools
          CL1\Administrator:Accessories\System Tools
          CL1\Administrator
Administrative Tools
          CL1\Administrator:Administrative Tools
          CL1\Administrator
Startup   CL1\Administrator:Startup
          CL1\Administrator

[Startup Programs]

Program   Command   User Name Location
Tardis 2000         c:\progra~1\tardis~1.4\tardis.exe
          All Users Common Startup
AClntUsr  c:\program
files\altiris\aclient\aclntusr.exe      All Users
          HKLM\SOFTWARE\Microsoft\Windows\CurrentVers
ion\Run

[OLE Registration]

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

[Internet Explorer 5]

[ Following are sub-categories of this main category
]

[Summary]

Item      Value
Version   5.00.3315.1000
Build     53315.1000
Product ID          51876-270-9567332-05753
```

```
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 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
advpack.dll         5.0.3103.1000       87 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
browselc.dll        5.0.3315.2846       35 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
browseui.dll        5.0.3315.2846       789 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
ckcnv.exe 5.0.2189.1          9 KB      12/7/1999
7:00:00 AM          C:\WINNT\system32   Microsoft
Corporation
comctl32.dll        5.81.3103.1000      538 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
crypt32.dll         5.131.2195.2833     451 KB
          5/4/2001 11:05:02 AM
          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 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
iexplore.exe        5.0.2920.0          59 KB
          12/7/1999 7:00:00 AM          C:\Program
Files\Internet Explorer       Microsoft Corporation
imagehlp.dll        5.0.2195.2778       126 KB
          5/4/2001 11:05:02 AM
          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 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
jobexec.dll         5.0.0.1   47 KB     12/7/1999
7:00:00 AM          C:\WINNT\system32   Microsoft
Corporation
jscript.dll         5.1.0.5907          476 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
```

```
jsproxy.dll         5.0.2920.0          13 KB
          12/7/1999 7:00:00 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 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
msjava.dll          5.0.3802.0          923 KB
          5/4/2001 11:05:02 AM
          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
11:05:02 AM         C:\WINNT\system32   Microsoft
Corporation
occache.dll         5.0.3103.1000       86 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
ole32.dll 5.0.2195.2887       970 KB    5/4/2001
11:05:02 AM         C:\WINNT\system32   Microsoft
Corporation
oleaut32.dll        2.40.4517.0         612 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
olepro32.dll        5.0.4517.0          160 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
rsabase.dll         5.0.2195.2228       128 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
rsaenh.dll          5.0.2195.2228       131 KB
          5/4/2001 11:05:02 AM
          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 11:05:02 AM
          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 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
shell32.dll         5.0.3315.2902       2304 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
shlwapi.dll         5.0.3315.1000       283 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
url.dll   5.0.2920.0          82 KB     12/7/1999
7:00:00 AM          C:\WINNT\system32   Microsoft
Corporation
urlmon.dll          5.0.3315.1000       441 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
```

```
vbscript.dll        5.1.0.5907          428 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
webcheck.dll        5.0.3315.1000       252 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
win.com   5.0.2134.1          24 KB     12/7/1999
7:00:00 AM          C:\WINNT\system32   Microsoft
Corporation
wininet.dll         5.0.3315.1000       457 KB
          5/4/2001 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
winsock.dll         3.10.0.103          3 KB
          12/7/1999 7:00:00 AM
          C:\WINNT\system32   Microsoft Corporation
wintrust.dll        5.131.2195.2779     162 KB
          5/4/2001 11:05:02 AM
          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 11:05:02 AM
          C:\WINNT\system32   Microsoft Corporation
wsock32n.dll        <File Missing>      Not Available
          Not Available       Not Available       Not
Available

[Connectivity]

Item      Value
Connection Preference         Never dial
EnableHttp1.1       1
ProxyHttp1.1        0

LAN Settings

AutoConfigProxy     wininet.dll
AutoProxyDetectMode Disabled
AutoConfigURL
Proxy     Disabled
ProxyServer
ProxyOverride

[Cache]

[ Following are sub-categories of this main category
]

[Summary]

Item      Value
Page Refresh Type   Automatic
Temporary Internet Files Folder         C:\Documents
and Settings\Administrator\Local Settings\Temporary
Internet Files
Total Disk Space    17359 MB
Available Disk Space          13166 MB
Maximum Cache Size  542 MB
Available Cache Size          542 MB

[List of Objects]

Program File        Status    CodeBase
No cached object information available

[Content]

[ Following are sub-categories of this main category
]

[Summary]

Item      Value
Content Advisor     Disabled

[Personal Certificates]

Issued To Issued By Validity  Signature Algorithm
Administrator       Administrator       9/13/2002 to
8/20/2102 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 Installation Procedures

Microsoft SQL Server 2000 Installation Procedures
Type of installation: custom
During the custom installation, use the default settings for all except the following two areas:
Services accounts:
SQL Server - local system account
SQL Server Agent - local system account
Set the sort order/collation as Latin1_General_Bin

Microsoft COM Component Configuration Parameters

The component services tool in Windows 2000 was used to change the queue settings for the TPCC COM+ single queue component. The single queue component was set to enable object pooling, object construction, just in time activation, and component supports events and statistics. The min and max pool size for the single queue component on the client was 72. Delivery threads were set under the TPCC key in the registry. The construction string was Dummy String

Appendix D: 60-Day Space

TPC-C 60 Day Space Requirements

Warehouses	**5,728**				TpmC	**71,413.00**			
Table	Rows	Data KB	Index KB	Extra 5% KB	8hr Space	Total Space KB		MSSQL_misc_fg	MSSQL_cs_fg
Warehouse	5,760	**616**	**16**	32		664		664	
District	57,600	**6,400**	**32**	322		6754		6754	
Customer	172,800,000	**125,672,744**	**7,493,656**	6,658,320		139824720			139824720
History	172,800,000	**9,600,008**	**24**		1,932,584	9600032		11532616	
New _order	51,840,000	**819,616**	**1,880**	41,075		862571		862571	
Orders	172,800,000	**5,296,568**	**2,408,504**		7,049,499	7705072		14754571	
Order_line	1,728,003,323	**108,000,224**	**228,584**		23,334,407	108228808		131563215	
Item	100,000	**9,528**	**32**	478		10038		10038	
Stock	576,000,000	**184,320,008**	**344,296**	9,233,215		193897519			193897519
Total		433,725,712	10,477,024	15,933,441	32,316,490	460,136,177		158,730,428	333,722,239
	MB						files=	**1**	**5**
Dynamic Space	120,016	Sum of Data for Order, Orderline and History					size=	**21,312,000**	**8,793,600**
Static Space	329,335	Sum of Data+Index+5%-Dynamic Space					Total=	21,312,000	43,968,000
Free Space	na	Total Allocated Spac - (Dynamic + Static Space)					8K bl	170,496,000	351,744,000
Daily Grow th	23,941	(Dynamic Space/(W*62.5))*tpmc						OK	OK
Daily Spread	-	(Free Space -1.5*Daily Grow th) Zero Assumed							
60 Day Space MB	1,765,771								
60 Day Space GB	1,724.39	GB							
Log Size	172,000.00	MB							
KB Per New Order	4.73	KB							
8 hr log MB	158,476	MB							
8 hr log GB	154.7622	GB							
Space Usage	GB Needed	Disks Measured	GB Priced	Disk Size	Formatted Size				
60 Day Space DB	1,724.39	168	5698.56	36.4GB	33.920				
			0.00						
			0.00						
Total DB			5698.56						
8-hr log + mirror	309.5243	4	546.88	146.8GB	136.72				
OS, Sw ap	3	1	33.92	36.4GB	33.920				
Total Storage	2,036.91	GB	6,279.36	GB					

tpmC	71,413.00									
	Data Before KB	Index Before KB	Data After KB	Index After KB	Data Grow KB	Index Grow KB	Total Grow KB	KB/New- Order	8-Hr Growth KB	8-Hr Growth MB
History	9,600,008	24	10,636,656	104	1,036,648	80	1,036,728	0.0564	1,932,583.71	1,887.29
Order	5,296,568	2,408,504	6,668,152	4,818,600	1,371,584	2,410,096	3,781,680	0.2057	7,049,499.16	6,884.28
Order-Line	108,000,224	228,584	120,290,672	455,800	12,290,448	227,216	12,517,664	0.6807	23,334,407.42	22,787.51
										31,559.07
	sum(*) Before		sum(*) After		Num New-					
d_next_o_id	172,857,600		191,246,046		18,388,446					
	Before MB		After MB		Grow MB			KB/New-Order	8-Hr Growth MB	Growth GB
Log	2218.15		87232.31		85014.16			4.7342	158,476.45	154.76
								4,847.8162	bytes	
172000	1.2896246		50.716461							
Database tpcc log used (%)										

Appendix E:
Third Party Letters

Microsoft Corporation
One Microsoft Way
Redmond, WA   98052-6399

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

Microsoft

February 4, 2005

Hewlett-Packard Company
David Adams
20555 SH 249
MS 150402
Houston, TK 77040

Mr. Adams:

Here is the information you requested regarding pricing for several Microsoft products to be used in conjunction with your TPC-C benchmark testing.

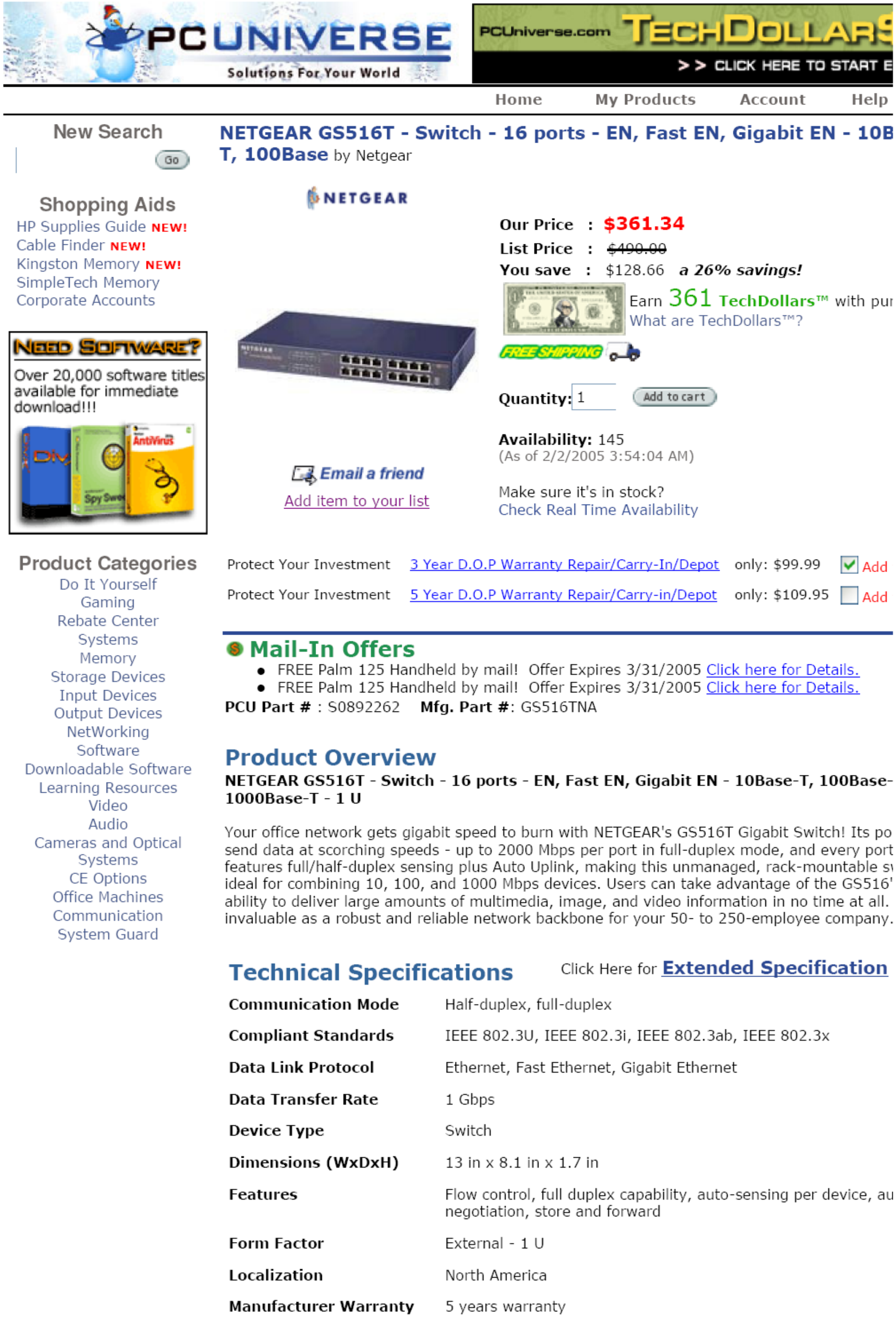
All pricing shown is in US Dollars ($).

Part Number	Description	Unit Price	Quantity	Price
810-00845	**SQL Server 2000 Enterprise Edition** *Per Processor Licensing* *Discount Schedule: Open Program - Level B* *Unit Price reflects a 14% discount from the retail unit price of $19,999.*	$17,279	2	$34,558
C11-00821	**Windows 2000 Server** *Server License Only - No CALs* *Discount Schedule: No Level* *Unit Price reflects a 8% discount from the retail unit price of $799.*	$738	4	$2,952
P72-00264	**Windows Server 2003, Enterprise Edition** *Server License Only - No CALs* *Discount Schedule: 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 Edition** *Discount Schedule: No Discounts Applied*	$109	1	$109
	Microsoft Problem Resolution Services *Professional Support* *(1 incident)*	$245	1	$245

All products are currently orderable through Microsoft's normal distribution channels.

This quote is valid for the next 90 days.

If we can be of any further assistance, please contact Jamie Reding at (425) 703-0510 or jamiere@microsoft.com.



Home My Products Account Help

New Search

Shopping Aids

HP Supplies Guide **NEW!**
Cable Finder **NEW!**
Kingston Memory **NEW!**
SimpleTech Memory
Corporate Accounts

Over 20,000 software titles available for immediate download!!!

NETGEAR GS516T - Switch - 16 ports - EN, Fast EN, Gigabit EN - 10B T, 100Base by Netgear

Our Price	**:**	**$361.34**
List Price	**:**	~~$490.00~~
You save	**:**	$128.66 ***a 26% savings!***

Earn 361 **TechDollars™** with pur
What are TechDollars™?

Quantity: 1

Availability: 145
(As of 2/2/2005 3:54:04 AM)

Make sure it's in stock?
Check Real Time Availability

Email a friend
Add item to your list

Protect Your Investment	3 Year D.O.P Warranty Repair/Carry-In/Depot	only: $99.99	☑ Add
Protect Your Investment	5 Year D.O.P Warranty Repair/Carry-in/Depot	only: $109.95	□ Add

Product Categories

Do It Yourself
Gaming
Rebate Center
Systems
Memory
Storage Devices
Input Devices
Output Devices
NetWorking
Software
Downloadable Software
Learning Resources
Video
Audio
Cameras and Optical Systems
CE Options
Office Machines
Communication
System Guard

Mail-In Offers

- FREE Palm 125 Handheld by mail! Offer Expires 3/31/2005 Click here for Details.
- FREE Palm 125 Handheld by mail! Offer Expires 3/31/2005 Click here for Details.

PCU Part # : S0892262 **Mfg. Part #**: GS516TNA

Product Overview

NETGEAR GS516T - Switch - 16 ports - EN, Fast EN, Gigabit EN - 10Base-T, 100Base-1000Base-T - 1 U

Your office network gets gigabit speed to burn with NETGEAR's GS516T Gigabit Switch! Its po send data at scorching speeds - up to 2000 Mbps per port in full-duplex mode, and every port features full/half-duplex sensing plus Auto Uplink, making this unmanaged, rack-mountable sv ideal for combining 10, 100, and 1000 Mbps devices. Users can take advantage of the GS516' ability to deliver large amounts of multimedia, image, and video information in no time at all. invaluable as a robust and reliable network backbone for your 50- to 250-employee company.

Technical Specifications Click Here for **Extended Specification**

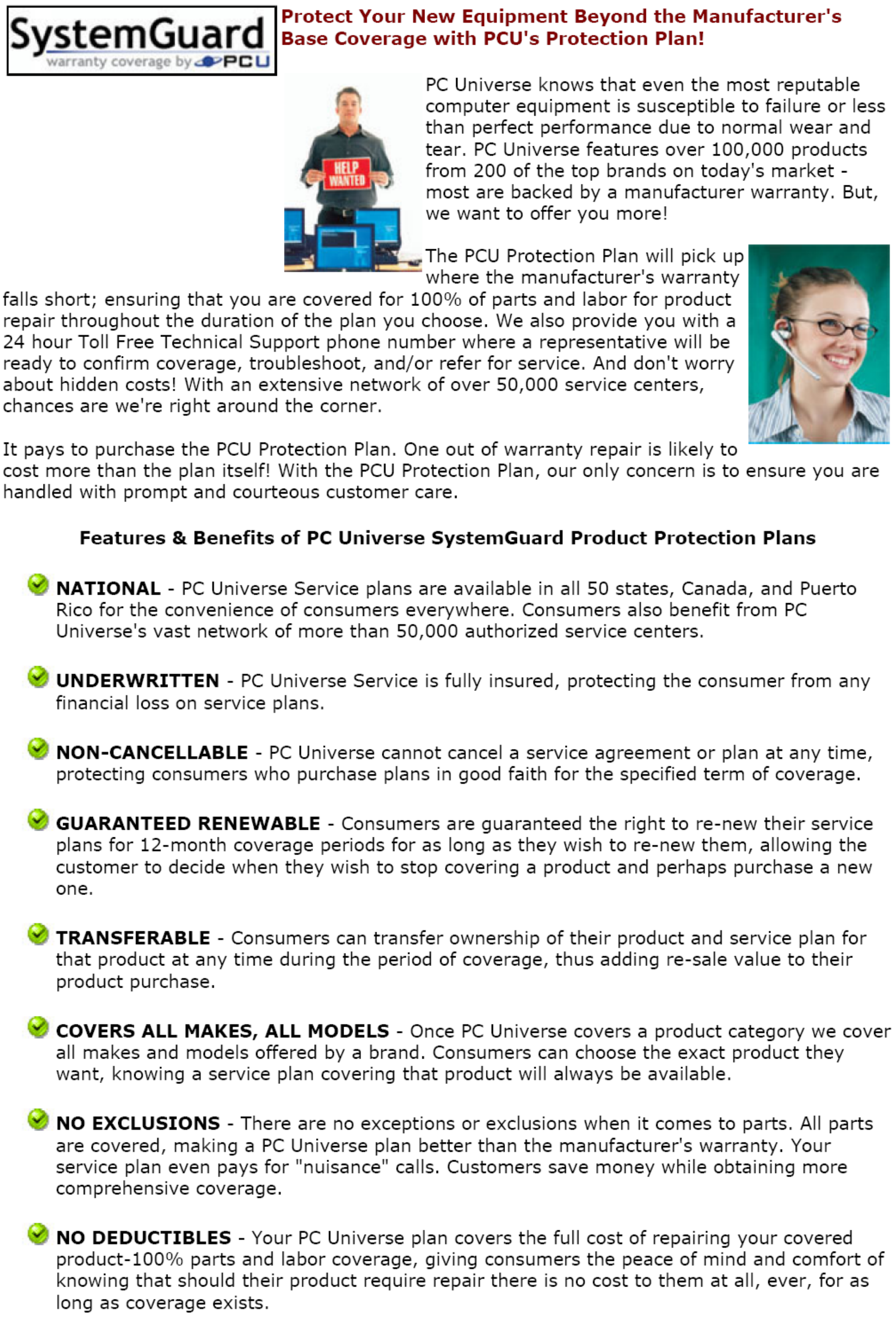
Communication Mode	Half-duplex, full-duplex
Compliant Standards	IEEE 802.3U, IEEE 802.3i, IEEE 802.3ab, IEEE 802.3x
Data Link Protocol	Ethernet, Fast Ethernet, Gigabit Ethernet
Data Transfer Rate	1 Gbps
Device Type	Switch
Dimensions (WxDxH)	13 in x 8.1 in x 1.7 in
Features	Flow control, full duplex capability, auto-sensing per device, au negotiation, store and forward
Form Factor	External - 1 U
Localization	North America
Manufacturer Warranty	5 years warranty

Product Detail Page 2 of 2

Ports Qty	16 x Ethernet 10Base-T, Ethernet 100Base-TX, Ethernet 1000E
Power	AC 110/230 V (50/60 Hz)
Product Description	NETGEAR GS516T - switch - 16 ports
Weight	5.3 lbs

Contact Us | Policies | Order Tracking | Terms of Use | Privacy and Security

site is best experienced at 1024 x 768 with Internet Explorer 4.0+. Interested in PCU Employment Opportunities? Send us an email requesting more inf



Protect Your New Equipment Beyond the Manufacturer's Base Coverage with PCU's Protection Plan!

PC Universe knows that even the most reputable computer equipment is susceptible to failure or less than perfect performance due to normal wear and tear. PC Universe features over 100,000 products from 200 of the top brands on today's market - most are backed by a manufacturer warranty. But, we want to offer you more!

The PCU Protection Plan will pick up where the manufacturer's warranty falls short; ensuring that you are covered for 100% of parts and labor for product repair throughout the duration of the plan you choose. We also provide you with a 24 hour Toll Free Technical Support phone number where a representative will be ready to confirm coverage, troubleshoot, and/or refer for service. And don't worry about hidden costs! With an extensive network of over 50,000 service centers, chances are we're right around the corner.

It pays to purchase the PCU Protection Plan. One out of warranty repair is likely to cost more than the plan itself! With the PCU Protection Plan, our only concern is to ensure you are handled with prompt and courteous customer care.

Features & Benefits of PC Universe SystemGuard Product Protection Plans

✓ **NATIONAL** - PC Universe Service plans are available in all 50 states, Canada, and Puerto Rico for the convenience of consumers everywhere. Consumers also benefit from PC Universe's vast network of more than 50,000 authorized service centers.

✓ **UNDERWRITTEN** - PC Universe Service is fully insured, protecting the consumer from any financial loss on service plans.

✓ **NON-CANCELLABLE** - PC Universe cannot cancel a service agreement or plan at any time, protecting consumers who purchase plans in good faith for the specified term of coverage.

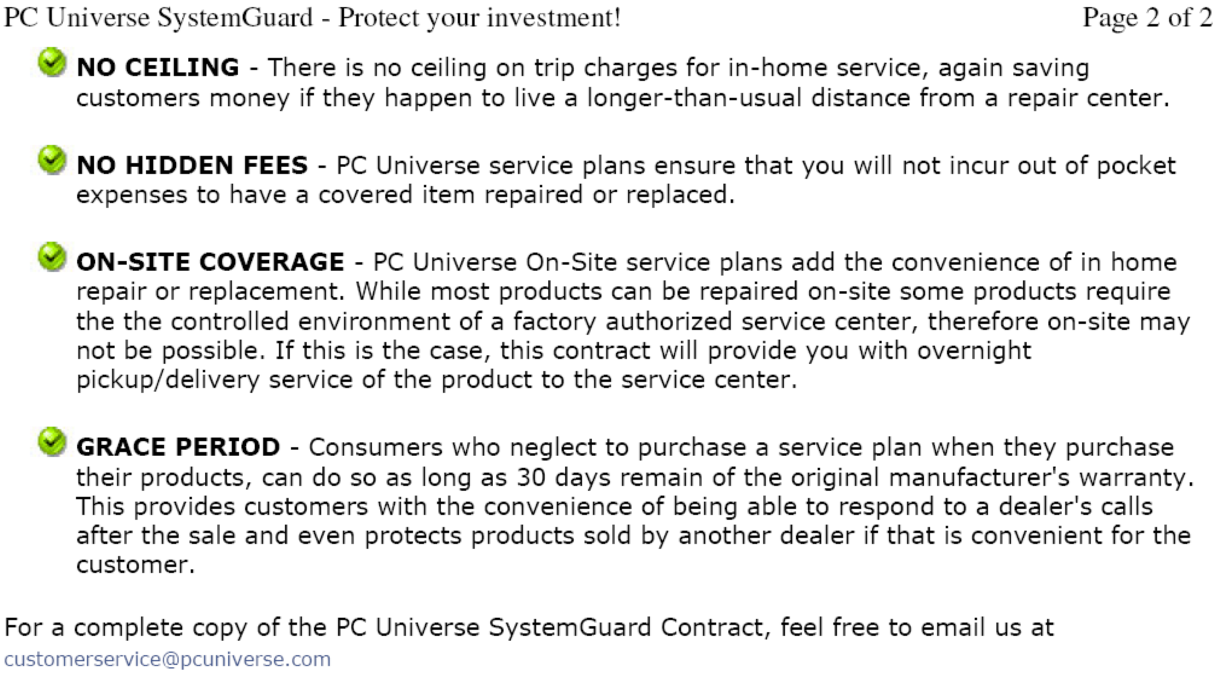
✓ **GUARANTEED RENEWABLE** - Consumers are guaranteed the right to re-new their service plans for 12-month coverage periods for as long as they wish to re-new them, allowing the customer to decide when they wish to stop covering a product and perhaps purchase a new one.

✓ **TRANSFERABLE** - Consumers can transfer ownership of their product and service plan for that product at any time during the period of coverage, thus adding re-sale value to their product purchase.

✓ **COVERS ALL MAKES, ALL MODELS** - Once PC Universe covers a product category we cover all makes and models offered by a brand. Consumers can choose the exact product they want, knowing a service plan covering that product will always be available.

✓ **NO EXCLUSIONS** - There are no exceptions or exclusions when it comes to parts. All parts are covered, making a PC Universe plan better than the manufacturer's warranty. Your service plan even pays for "nuisance" calls. Customers save money while obtaining more comprehensive coverage.

✓ **NO DEDUCTIBLES** - Your PC Universe plan covers the full cost of repairing your covered product-100% parts and labor coverage, giving consumers the peace of mind and comfort of knowing that should their product require repair there is no cost to them at all, ever, for as long as coverage exists.



PC Universe SystemGuard - Protect your investment! Page 2 of 2

- ✓ **NO CEILING** - There is no ceiling on trip charges for in-home service, again saving customers money if they happen to live a longer-than-usual distance from a repair center.

- ✓ **NO HIDDEN FEES** - PC Universe service plans ensure that you will not incur out of pocket expenses to have a covered item repaired or replaced.

- ✓ **ON-SITE COVERAGE** - PC Universe On-Site service plans add the convenience of in home repair or replacement. While most products can be repaired on-site some products require the the controlled environment of a factory authorized service center, therefore on-site may not be possible. If this is the case, this contract will provide you with overnight pickup/delivery service of the product to the service center.

- ✓ **GRACE PERIOD** - Consumers who neglect to purchase a service plan when they purchase their products, can do so as long as 30 days remain of the original manufacturer's warranty. This provides customers with the convenience of being able to respond to a dealer's calls after the sale and even protects products sold by another dealer if that is convenient for the customer.

For a complete copy of the PC Universe SystemGuard Contract, feel free to email us at customerservice@pcuniverse.com